FLIGHT
& The AIRCRAFT ENGINEER.

First Aero Weekly in the World.
Founder and Editor: STANLEY SPOONER.
A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.
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EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."
(Sir Auckland Geddes, Minister of National Service.)

SINCE the last issue of "FLIGHT" appeared we have moved a long step along the road to the peace we all so ardently desire. Defeated at every point of the far-flung Western battle-line, and with his armies in full retreat to the filthy lair from which they emerged in 1914 on their enterprise of world conquest, the enemy has squealed for peace, but for a peace which will leave him in the position he occupied before he embarked upon his crime against humanity. He wants an armistice, in order that he may be free to re-organise his demoralised armies for the defence of the Father-land. That he cannot have. It is abundantly clear that the Allies can enter into no discussions as to how, when and under what conditions he shall evacuate the territories he has violated. Unconditional evacuation under the pressure of Allied bayonets is the one condition to which we can subscribe. This matter of an armistice preparatory to the discussion of a permanent peace is a question for the soldiers and sailors to decide—it is not one for the politicians to override the military side which has not yet completed its task of reducing the enemy to impotence. Therefore we can leave the matter of the armistice to their decision and proceed to look farther ahead to the time when we shall dictate the terms upon which the punishment of Germany must take shape.

The Only Kind of Peace.

The main issues have already been decided. France, Belgium, Montenegro, Serbia and Roumania must be restored, and so far as money can compensate for their losses they must be reimbursed. Alsace and Lorraine must be restored to their rightful owners. Poland must become a separate entity, and so on. But there are lesser details which require to be settled, details which are possibly subsidiary, but are, nevertheless, of capital importance to the future security of the world's peace. Germany has of a sudden donned the garment of democracy over her shining armour and purports to stand before the world as a democratic nation. But we must not forget that the power which has placed Prince Max in the position of Imperial Chancellor and set him up as the apostle of democracy can throw him down in a week or a month, and replace him by a von Tirpitz. It is one thing to set up a figure-head, but quite another to radically alter the constitution of the body politic. Germany has done the one, but it still remains for her to do the other. That being so, we cannot safely regard the peace move as intended to produce any other effect than to enable the Kaiser and his advisers to emerge from the war with an intact Navy, a virtually intact army, and the same form of government, camouflaged perhaps, as that which plunged the world into a welter of bloodshed. To begin with, then, there can be no peace with the Hohenzollerns, and the sooner Germany is brought to realise that the sooner she will come to the one frame of mind which is necessary to the opening of any peace discussions.

A Power which has prostituted its navy to the prosecution of ruthless submarine war against the maritime traffic of the world certainly cannot be admitted to the freedom of the seas or to the commercial community of the nations for at least a generation. Nor can Germany, who used her initial superiority in the air to murder defenceless civilian populations, be permitted the use of an arm which,

developed with German thoroughness, may put her again in the position of being able to make war on civilisation. The sea and the air must be closed to her except under the most stringent conditions, which must be so drafted as to put it completely out of her power even to contemplate mischief. We agree that it is not altogether easy to see precisely how the required condition is to be brought about, but we shall have even more difficult problems to solve, and we are at least this to the good—that the very last thing to be considered is Germany's interest or the damage it may cause her. No penalty that the wit of man can devise will be too severe.

Another condition which we must not allow the politicians and the friends of Germany to drop out of the peace terms is the one calling for the punishment of those who have been responsible for the major crimes against humanity committed by the Central Powers. No matter how highly placed they may be, they must be handed over to take their trial before a judicial tribunal agreed upon by the Allies, and in the composition of which the Hun shall have no say. We have a long account against them in the matter of "frightfulness" at sea, on land and in the air, and that account must be paid to the uttermost penny. Our own Admiralty has set an excellent example in the publication of a "black-list" of the German naval authorities who are "wanted" for their crimes afloat. The names of the principal offenders on land and in the air, beginning with the Kaiser himself, are as well known to the Allied authorities as those of their sea-pirates, and a list of them should be published at once in order to let the German people know who are standing between them and the peace they want so badly. We are aware that such a black-list is said to have been kept by the Allies, but the names which figure on it have not been made public. Let us know who these men are, so that when the time comes the peoples of the Allied countries may see that none are able to escape the punishment of their crimes. Until we lay it down definitely that we intend to exact the utmost penalty of the law in the case of these super-pirates and tell the German people so, the latter will not appreciate the full weight of the indictment against them. Let the list be published, then, and we shall all know where we are. There is an additional reason why it should be done. Once these fiends have been black-listed their friends here will be unable to assist them to escape their just fate—they must stand their trial in precisely the same way as the offender against the criminal laws of any civilised State.

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The Needs of the Red Cross.

The special appeal which is being made for additional funds for the British Red Cross is one to which no one should, or can, turn a deaf ear. To enumerate even a part of the magnificent work which has been done by this organisation during more than four years of war would occupy many large volumes. Its efforts have been extended far beyond its original intentions, with a corresponding increase of expenditure which can only be met out of the contributions of those who know and admire its work. In the past year the Society has contributed to the auxiliary hospitals no less a sum than £350,000, and is now disbursing money at the rate of £40,000 a week, which is an amount well in excess of its income. It has funds in hand, but the limits of these resources are clearly defined, and, as things stand at present, it can only carry on until the middle of January next. The suggestion of peace has caused a marked falling off in subscriptions, many of its former subscribers apparently being under the impression that its work will cease with the conclusion of hostilities. Peace, however, is a long way from being in sight, and when it does come there will still remain a great deal of work which can only be done by the Red Cross Society. Hence it is needful to direct special attention to the financial aspect of the Society's work in order that the vigour of the organisation may be restored, and with it the confidence and enterprise of its workers.

The Lord Mayor has taken the work in hand so far as the City is concerned, while no fewer than sixty trades and professions have been formed into separate sections, each in its own sphere to do its utmost to assist in the realisation of the ideal set by the Lord Mayor, which is to make "Our Day" bring to the coffers of the Red Cross Society a round million of pounds. It is a worthy ideal and one that we wholeheartedly commend to all our readers. Direct subscriptions can be sent to the chairman of the Joint Finance Committee, Sir Robert Hudson, G.B.E., at the headquarters of the Society, 83, Pall Mall, S.W.

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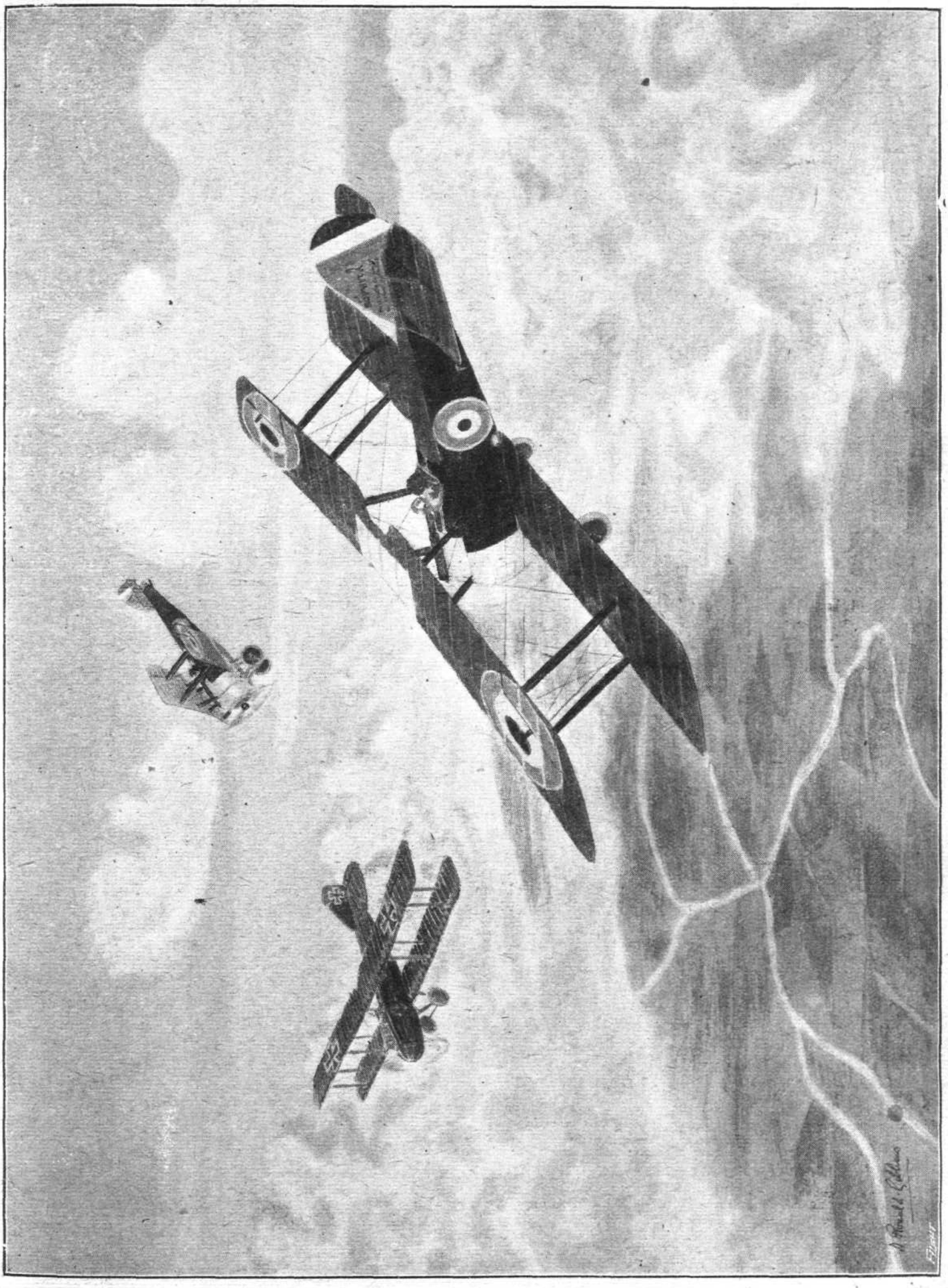
Women in Industry.

One of the major problems that will have to be considered after the war is the position to be occupied by women in industry. To some it appears that the problem will be a very acute one and that out of it a great deal of trouble is likely to arise. For our own part we are rather inclined to the opinion that this, like many other problems arising out of the change of conditions brought about by the war, will have a strong tendency to right itself automatically. The general question has been discussed at a conference between women and employers of labour, arranged by the National Alliance of Employers and Employed. The first question discussed was whether the one and three-quarter million women who, in addition to the three millions in industry before the war, now compose the women's industrial army, can be retained in industry after the war. It was first of all pointed out that there was first to be considered the pledge of the Government to the trade unions that the men should all go back to their old employment, and that pre-war conditions should be reinstated in industry. There was also the extreme difficulty of the conversion of the factories from the production of war material to the needs of peace, and there was the further problem of obtaining the necessary raw materials so that there should be no break in the work. It was realised by the conference that the Government must fulfil its pledges, but that these could not be held to apply to new industries or to extensions of old which have led to the employment of greater numbers of workers as compared with pre-war figures. Then the critical question of wages was discussed, and the conference was unanimously of opinion that a minimum wage should be fixed, based on a reasonable standard of life, which would have to vary in certain districts. It was also agreed that during the period of demobilisation it would be better that a system of part-time work should be instituted, so that the whole of the workpeople might be employed for a part of the day or part of the week rather than that some should be employed full time and the rest turned out on the unemployed market. The ques-



CORNERED.—An Albatros C5 caught by a couple of British machines.

tion of equal pay for equal work, although one of the most important of all, does not appear to have been touched.

We confess we are not quite able to discern where it all leads. It does not seem to help much to sit down and discuss academic questions and pass pious resolutions. As we have already remarked, the question at large is one that will in very great measure settle itself without undue interference. The women who are now engaged in war work may be divided into three categories. The first includes all those who are working now, not because of the necessity of earning money, but in response to the patriotic impulse. They do not want to continue, and will drop out of the problem with the closing down of the war effort. What proportion these bear to the whole we cannot say. Probably it is a relatively small one, but that is as it may be. Secondly, there are those who are not particularly fitted for industrial work, but who have been taken in because the national need was too great for any offer of help to be ignored. Most of these are frankly in it for the higher wages they can command in comparison with their former occupations and the greater freedom of movement they obtain, as, for example, the huge numbers of women who have passed from domestic duties to munition factories. A very large number of these will automatically drift back to their old occupations when things are finding their level and enormous wages are not to be obtained. The third category includes those who would have taken to industrial work in any case, or who find in it an alternative to early marriage and what they consider dependence. Most of these will undoubtedly stay, but they will not constitute a surpassingly difficult problem. Unfortunately we have lost outright something like a million of our best men, while another large proportion have been disabled past any possibility of resuming their old employment. In addition, there will be still a further number who, after the open-air life of campaigning, will not care to settle down to sedentary pursuits and will seek a new life in the Colonies. By the time, then, that we have accounted for these it begins to look as though industry will with ease be able to absorb all the women workers who will want to say in it, and it seems at least a little premature to waste time in the discussion of problems which are not likely to arise in an acute form. It would seem to us that the great problem that will have to be met is not so much the one of whether women can be kept in industrial life, as the precise position they will occupy in it, and this is one which the conference does not seem to have debated at any length.

Mr. Kellaway, Parliamentary Secretary to the Ministry of Munitions, dealt with this side of the question, which is really the only one that matters much, in the course of an address to the Women's Liberal Association at Bedford. After reviewing the changes in industry which had come about as a result of the war, he went on to say that it had been said the Government, while they were extravagant in paying from 30s. to 35s. to women in women's trades, were tricksters and sweaters for not paying the whole of a man's wages to any woman who might be put on to his job. A War Cabinet Committee was now sitting to decide how much of a man's work a woman could do, and what proportion of his pay she should receive. It would also decide whether the pledges which had been made had been kept. The women came into the shops untrained and dependent on the men there for their teaching, and these men did not welcome the idea of an ignorant and useless newcomer receiving the wages that the men had only reached after years of work and experience. In most cases the women could not do the same work as a man, where strength was required. Experience seemed to show that five women were worth roughly three men. Where knowledge and skill were required a woman would learn very well one particular job, but she would not spend time learning her work as a whole, so that she could not be of the same general use as a man who could turn his hand to anything. Then in many occupations women were on the whole slower than men, so that they were a more expensive form of labour. They also needed better and more expensive factory conditions. Finally, they were a far less permanent form of labour. Out of very one hundred munition workers sixty left their jobs before the end of the first year, and thirteen before the end of the first month. Only four out of every ten completed their year.

These and many other facts about women's labour must be borne in mind when answering the apparently simple question, "Should women have equal pay for equal work?" The answer was, "Of course they must, if they do the same work as the men, of the same quality and of the same amount, with the same expense to the employer for supervision, and for what I may describe as overhead charges." There were certain conditions which should govern woman's position in industry after the war. Her labour must not be used to enable the employer to make larger profits than he would make if he employed men; it must be of a kind which she could perform without injury to her physical health. He believed there was a great future for women in industry. Their productions after the war would do much to repair the ravages that war had made. The need of production would be so supreme that there would be work not only for every soldier when he came back, but for many of the women who had taken their places. But the claims of the returned soldier must come first.

There is very little that need be added to Mr. Kellaway's expression of opinion, which is that of every unprejudiced observer. It is here, in the decision of what is and what is not "equal work," that the real problem in connection with women's work in industry will arise, and not in the question of whether or not women will remain in industrial life or in what numbers.

French Aid for R.A.F. Hospitals.

As a mark of appreciation of the splendid work and courage of our airmen, the French residents in Algiers, with the members of the local branch of the Over-Seas Club and Patriotic League, have forwarded £220 to the Over-Seas Club and Patriotic League, Aldwych, in aid of their R.A.F. Hospital Fund. The R.A.F. Auxiliary Hospital in Shirley Park is known as the Over-Seas Club branch, as a tribute to the generosity of members who have helped to defray its cost.

A Charge by Aeroplanes.

In connection with the American attack east of the Meuse it is reported that when it became known that the Germans were massing between Dainvillers and Warville for a counter-attack, 350 aeroplanes went up and dropped 32 tons of bombs on them. There are said to have been 200 bombers, 100 chasers, and 50 triplanes, arranged in nearly a dozen V-shaped formations. The counter-attack melted away, and 12 enemy machines which were encountered were crashed.

FLIGHT

THE FOKKER BIPLANE, TYPE D VII.

(*Concluded from page* 1144.)

As already mentioned the wings of the Fokker biplane form one of the most interesting features of the design, both aerodynamically and structurally. In Fig. 11 are shown four typical sections, taken at various points in the planes. The top section in the illustration is taken in the centre section of the top plane. Underneath this is a section taken on the top plane rib occurring a short distance inside the attachment of the inter-plane struts. These two sections give a good idea of the manner in which the planes of the Fokker biplane taper in camber towards the tips. It will be seen that both upper and lower surfaces of the section are flattened out towards the tip. The other two sections shown in Fig. 11 represent the lower plane rib at the root and inside

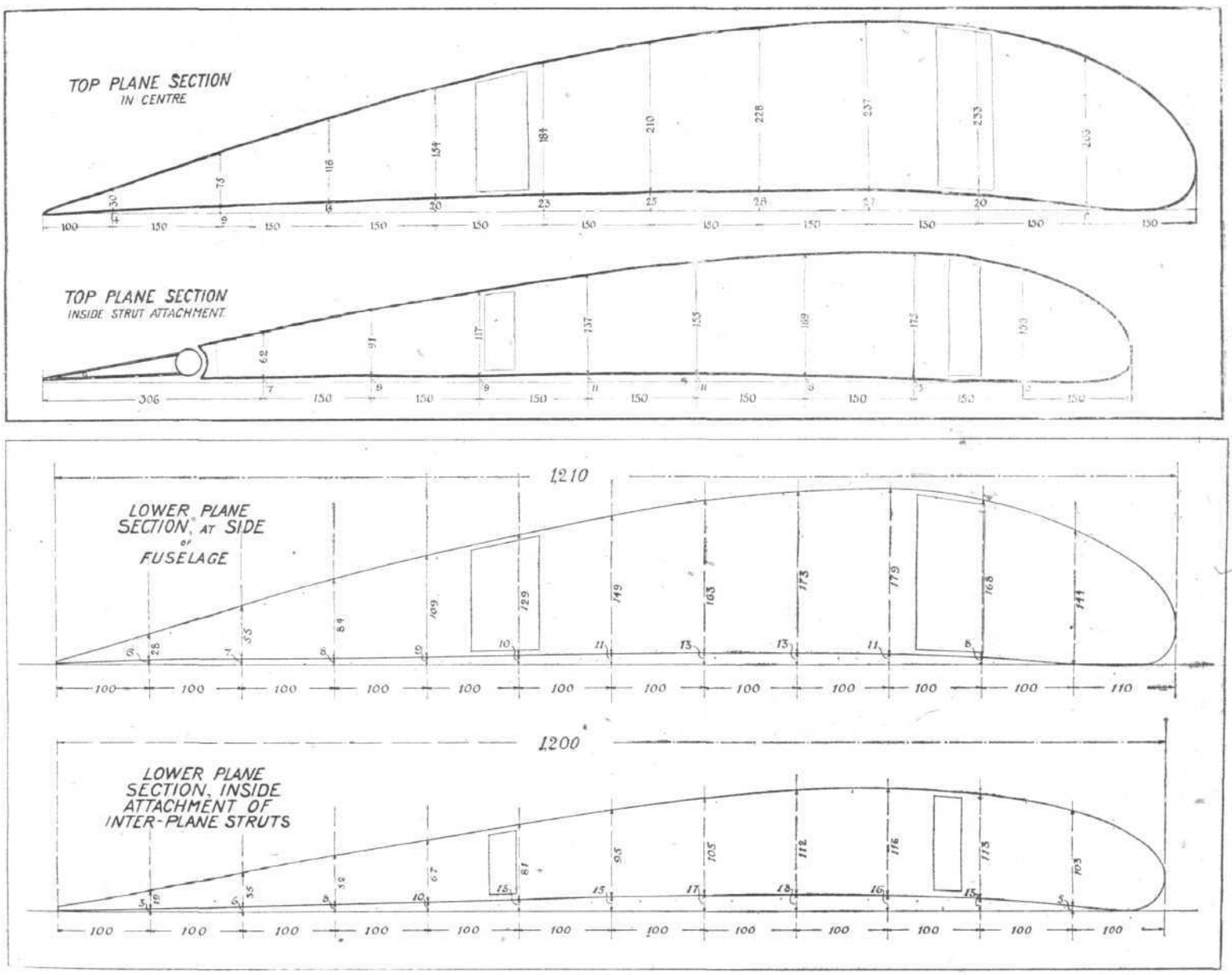


Fig. 11.—Four typical sections of the wings of the Fokker biplane.

the attachment of the inter-plane struts respectively. Here, it will be seen, there is no flattening out of the bottom camber, in fact it appears that the maximum bottom camber of the thinner section is slightly greater than that of the section at the root. In both upper and lower plane sections it will be observed that the distance from centre line of front spar to leading edge diminishes slightly as the tip is approached. This accounts for the sweep back referred to in a previous instalment of this article.

Constructionally the ribs are built up of solid webs of thin three-ply wood. The flanges of the ribs are attached in a somewhat unusual manner to the webs. Instead of having the flanges in one piece and grooved for the web, the flanges in the Fokker biplane are in two halves, the three-ply web passing between the two halves of the flanges and extending the full thickness of the section. The flanges are tacked together and to the web by horizontal tacks driven through and riveted over.

The wing spars are of the box type of construction, as indicated in Fig. 12, which shows the sections of all four spars in the centre, *i.e.*, where the maximum dimensions are found. The flanges, it will be noticed, are not solid, but are built up of two laminations each. The top flanges of all four spars are so shaped as to form an approximately rectangular space between them and the bottom flanges. At the points of attachment of the spars, such as to body or to inter-plane struts, this space is filled with a distance-piece in the form of a piece of wood. The distance-piece does not, however, touch the flanges direct, a piece of wood tapering towards the ends, which are forked, being interposed between the distance-piece or packing block and the flanges. The object of this arrangement appears to be connected with shear stresses on the spars, which are disposed of gradually instead of suddenly in this manner. The rib flanges are made of pine, and are connected by thin webs of three-ply, about 1.5 mm. thick, which are glued to the flanges. The tops and bottoms of the spars are afterwards covered with a strip of fabric, which extends over the sides of the spar to past the edge of the flanges, thus acting as a protection for the glued joints. The leading edge, as in the Fokker triplane, is in the form of very thin three-ply wood, which extends back to the front spar, where it finishes off in a serrated edge having its points tacked to the spar. This feature is shown in Fig. 13. This sketch also shows the vertical triangular-section pieces of wood which reinforce the rib webs, as well as the manner

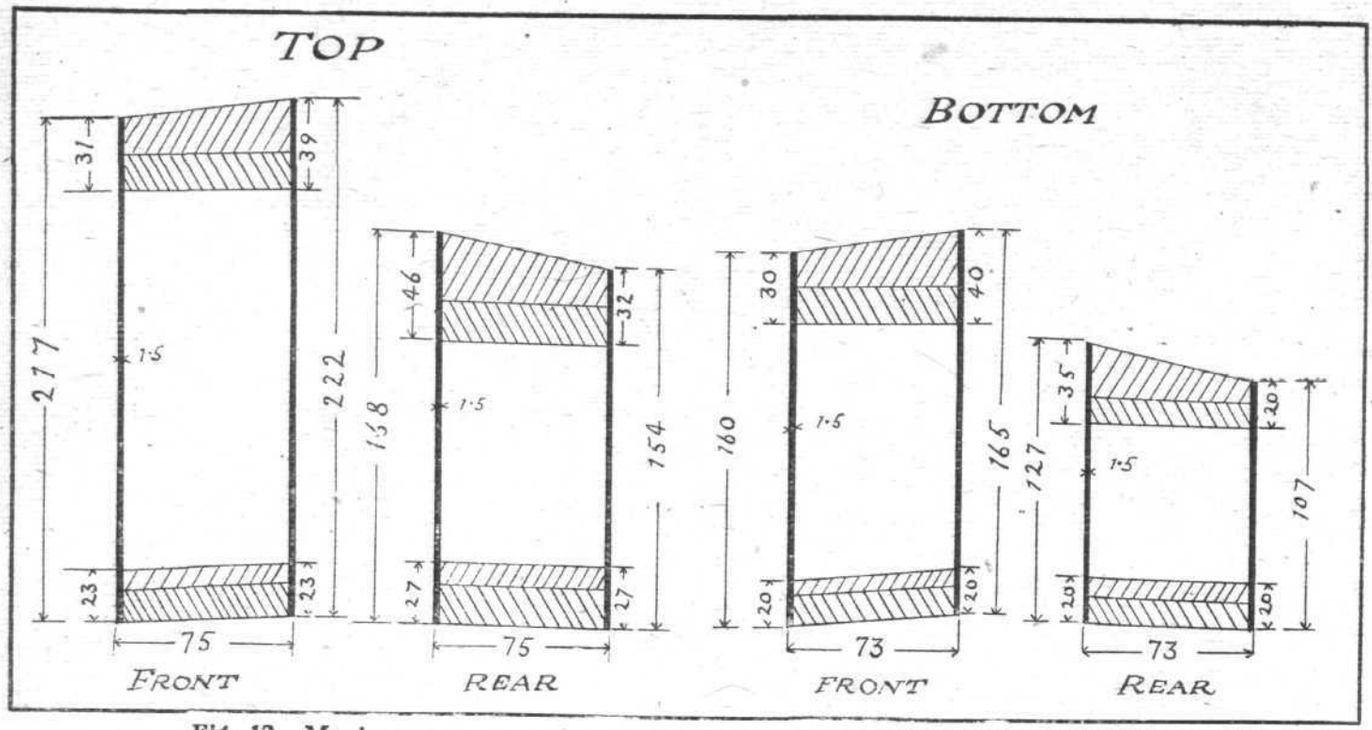


Fig. 12.—Maximum cross sections of the four main spars of the Fokker biplane.

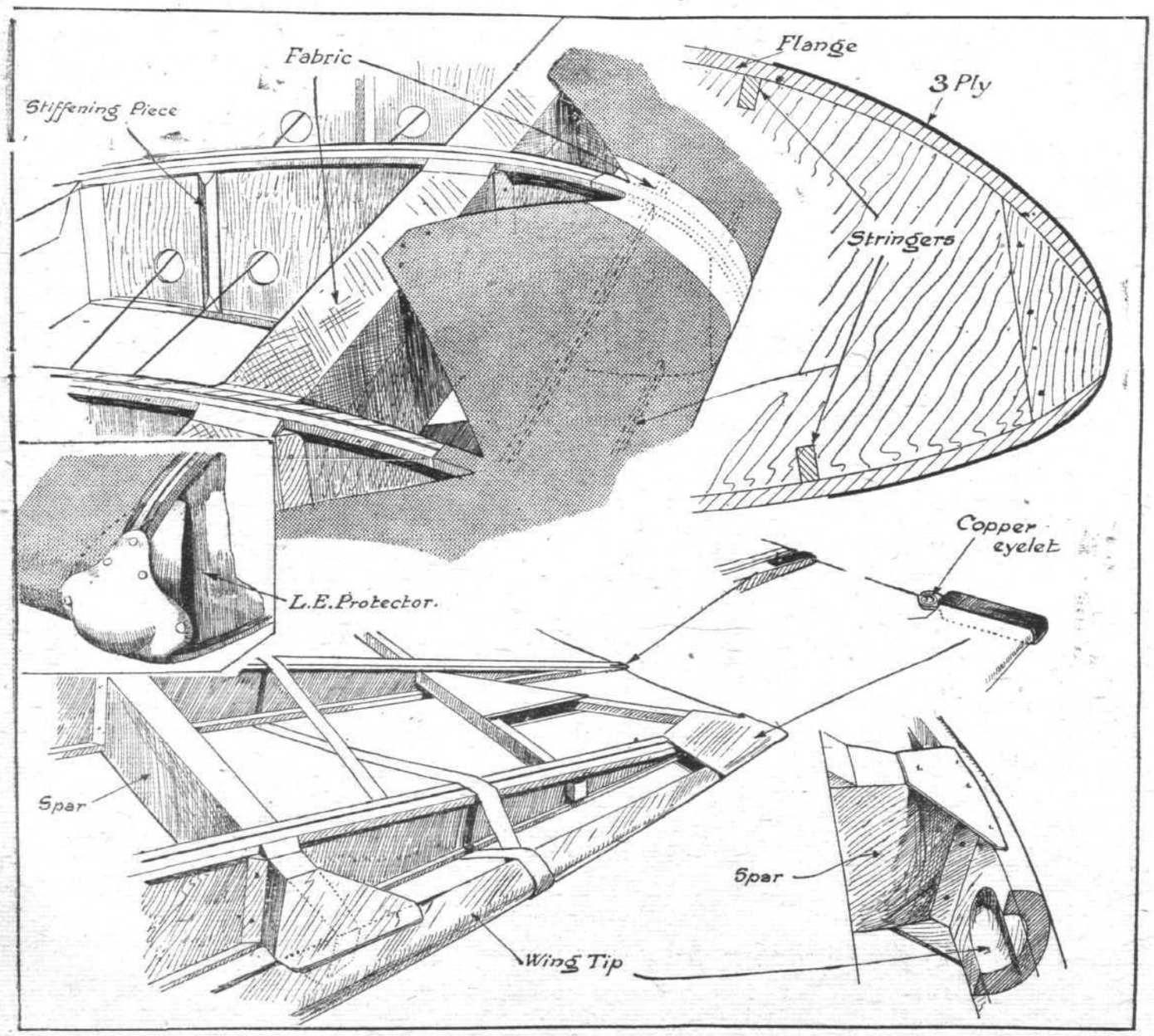


Fig. 13.—Some details of the wing construction on the Fokker biplane.

of attaching the ribs to the wing spars. The trailing edge is in the form of a wire, and its attachment to the ribs is shown in another sketch in Fig. 13. The end rib of the wings of the Fokker biplane is different to that of the triplane, which had, it may be remembered, a tip formed by an ordinary wing rib laid on its side. In the biplane the wing tip is formed by a piece of wood of U-section, which is attached to the ends of the spars as shown in the sketches at the bottom of Fig. 13. Between the spars, and between trailing edge and rear spar, the ribs are strengthened by tapes running alternately over and under the ribs. A short distance in front of the trailing edge there is a further reinforcement in the form of a long strip of wood of square section running through all the rib webs.

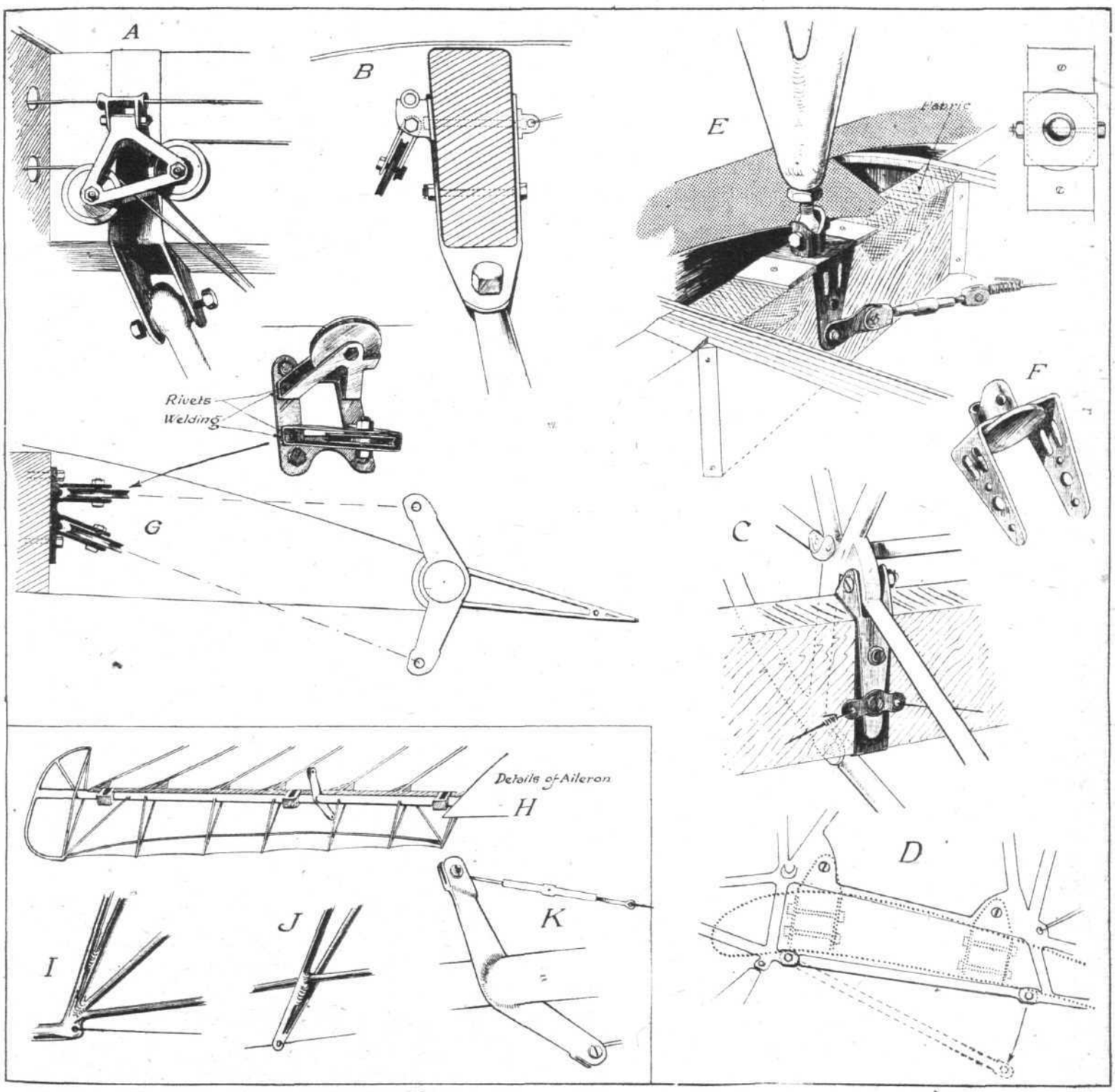


Fig. 14.—Some details of the spar attachments and *aileron* pulleys of the Fokker biplane.

The attachment of the wings to the body has already been briefly referred to. The front spar of the top plane is attached to the top of the tripod formed by the tubes rising from and welded to the body, which were described at the time of dealing with the *fuselage*. The rear spar is similarly attached to a single strut. The details of the attachment are shown at A and B, Fig. 14. A thin strip of steel is bent over the spar and passes down the sides of the spar to the bottom corners. Another piece of sheet steel—this of heavy gauge—is bent to form two forks, the upper of which fits over the sides of the spar, to which it is attached by two horizontal bolts, while the other fork projects downwards and inwards and serves as an anchorage for the bolt that passes through the head of the rear centre section strut. The attachment of the bottom plane to the *fuselage* is shown in sketches C and D, Fig. 14. The general principle is similar to that employed for the upper plane attachment, and the details will be easily understood from an inspection of the sketches. The manner in which the bottom plane, which is built in one piece, is dropped out of the body when the bolts have been removed is briefly indicated in the sketch D. The lower false *longerons* are cut at this point, and a trap door formed by a framework of steel tubing is bolted in place under the wing. By undoing these bolts the door can be swung out of the way and the bottom plane dropped through. The absence of wing bracing wires facilitates the dismantling and erecting of the wings.

The inter-plane struts of the Fokker biplane are of streamline steel tube. The manner of attaching them to the wing spars is illustrated in the sketch E of Fig. 14, which, although

representing the front spar attachment particularly, is typical of the other attachments as well. Vertical piercing of the spars is avoided by employing a base plate having forked members passing down the side of the spar and secured to it by two horizontal bolts. Through this base plate is inserted a socket of the shape shown at F, Fig. 14. This socket is machined out of the solid with a large base plate of circular shape, provided, however, with flats preventing it from turning. The base plate of the socket is of ample area, thus minimising the tendency of the socket to tilt on the spar owing to any angularity of the inter-plane struts.

Reference to the *aileron* controls has already been made and a diagram published of the path followed by the *aileron* control cables. The remaining sketches of Fig. 14 show the details of the arrangement of the various pulleys and guides for the *aileron* cables. At A is shown the method of mounting the pulleys on the rear top spar. A forked lug is secured to the spar by a horizontal bolt passing through the spar, and has welded to it a tubular guide for one of the *aileron* cables. The two pulleys are enabled to swing freely by pivoting the sheet steel framework carrying them on a bolt passing through the fork of the lug referred to above. A reference to the diagram (Fig. 6), published last week, will show where these pulleys occur.

Before reaching the *aileron* crank levers the cables pass over another set of pulleys, also mounted on the rear top spar, but immediately in front of the crank levers. These pulleys and the method of mounting them form the subject of the sketches at G, Fig. 14.

The *ailerons* of the Fokker biplane are built up of steel tubing, as shown at H. It will be noticed that with the exception of the balanced portion of the *aileron* the trailing edge is formed by a wire. The attachment of this wire to the framework is shown at I. A stiffener or false trailing edge is formed by a tube running through the *aileron*. This tube is welded into the angle between the tubular ribs of the *aileron* as shown at J. The *aileron* crank levers are welded direct to the tubular leading edge without the intermediary of a collar, as in the case of the elevators. The shape of the crank levers is shown at K. The hinges of the *ailerons* are exactly similar to those of the elevator and rudder, which were described and illustrated in a previous instalment of this article.

HONOURS

French Honours for Flying Officers.

It was announced in a supplement to the *London Gazette* that the following decorations have been conferred by the President of the French Republic for distinguished services rendered during the course of the campaign :—

Legion d'Honneur.

Croix d'Officier.—Bt. Col. (temp. Maj.-Gen.) J. M. Salmond, C.M.G., D.S.O. ; Capt. (temp. Lieut.-Col.) J. D. Mackworth, C.B.E., R.W. Surrey and R.F.C. ; Bt. Lieut.-Col. (temp. Brig.-Gen.) C. L. N. Newall, I.A.

Croix de Chevalier.—Capt. (temp. Major) the Hon. E. A. Stonor, R.F.C. (S.R.) ; Lieut. H. J. Finer, R.E. and R.F.C. ; Qrmr. and Hon. Capt. T. Lyons, R.F.C.

Croix de Guerre.

Temp. Lieut. W. A. Barnes, R.F.C. ; Flight-Commander F. T. Digby, D.S.C., R.N.A.S. ; Lieut. (temp. Capt.) W. B. Farrington, D.S.O., Notts and Derby (S.R.) and R.F.C. ; Lieut. (temp. Capt.) C. C. Morley, R.F.C. (S.R.) ; Major H. V. Stammers, R.F.C. ; Temp. Capt. T. C. Thomson, Gen. List and R.F.C. ; Temp. Lieut. W. A. Winter, G.L. and R.F.C. ; 18053 Flight Sergt. H. E. Beauchamp, R.F.C. ; 10267 1st Air Mech. C. S. Furrell, R.F.C. ; 4946 Qrmr. Sergt. J. J. Gadd, R.F.C. ; 2553 Sergt. C. W. Noel, R.F.C. ; 7679 1st Air Mech. (acting Cpl.) C. Perry, late R.F.C.

Médaille Militaire.

8432 Cpl. R. S. Bagley, R.F.C. ; 115569 Sergt. (Aerial Gunner) F. Hopper, M.M., R.F.C. ; 14374 Sergt. H. W. Scarnell, M.M., R.F.C.

Medals for the R.A.F.

It was announced in a supplement to the *London Gazette* on October 3rd, that H.M. the King has been pleased to approve of the award of the Distinguished Conduct Medal to the following :—

67051 Cpl. (acting Sergt.) E. A. Deighton, R.A.F.

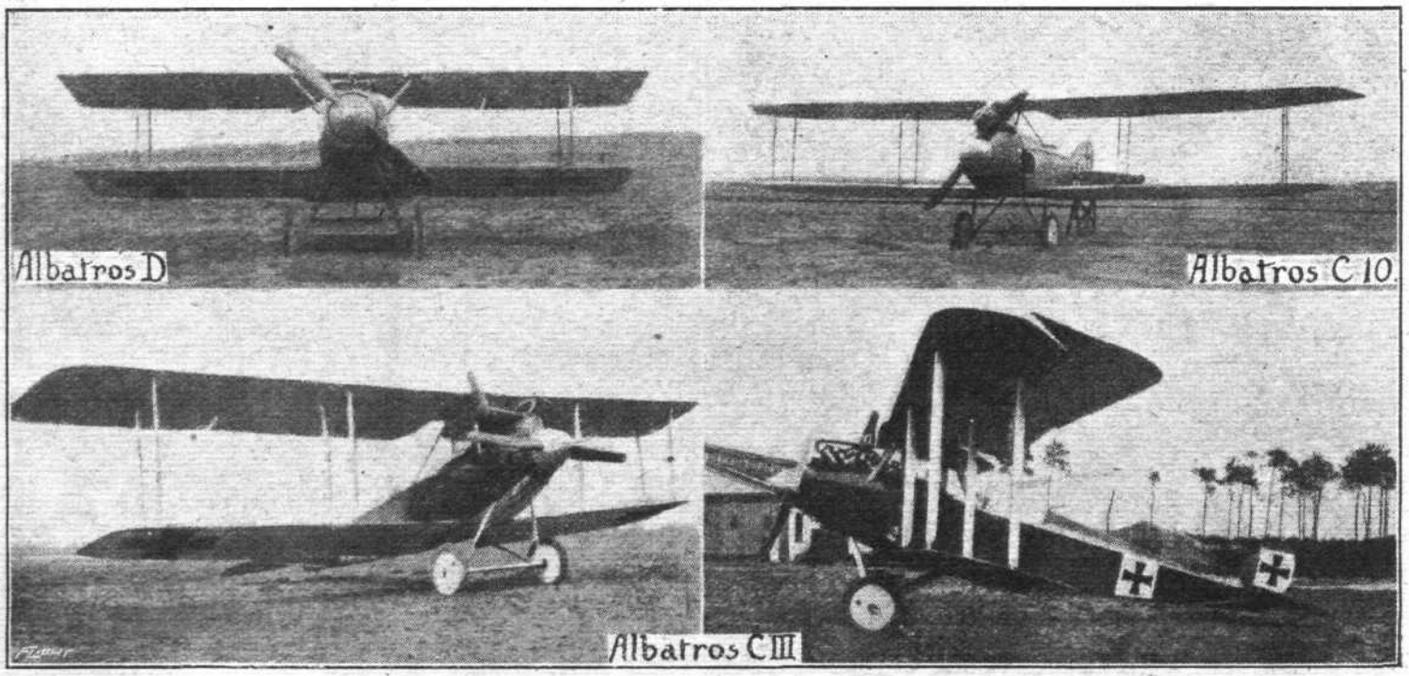
It was announced in a supplement to the *London Gazette*, on October 7th, that H.M. the King has approved of the award of the Military Medal for bravery in the field to the following :—

30869 Sergt. G. R. Smith, R.A.F.

Mentioned in Despatches.

It was announced in a supplement to the *London Gazette*, on October 7th, that the following name is to be added to those brought to notice for distinguished and gallant service and devotion to duty by General Sir E. Allenby, in his despatch of April 3rd, 1918 :—

Shekleton, Capt. (Temp. Lieut.-Col.) A., R.A.F.
(formerly R. Munster Fus.).



THREE MEMBERS OF THE ALBATROS FAMILY.—The D I one knows to be out of date, and as for the others the class numbers appear to have been chosen with a cheerful disregard for accuracy.

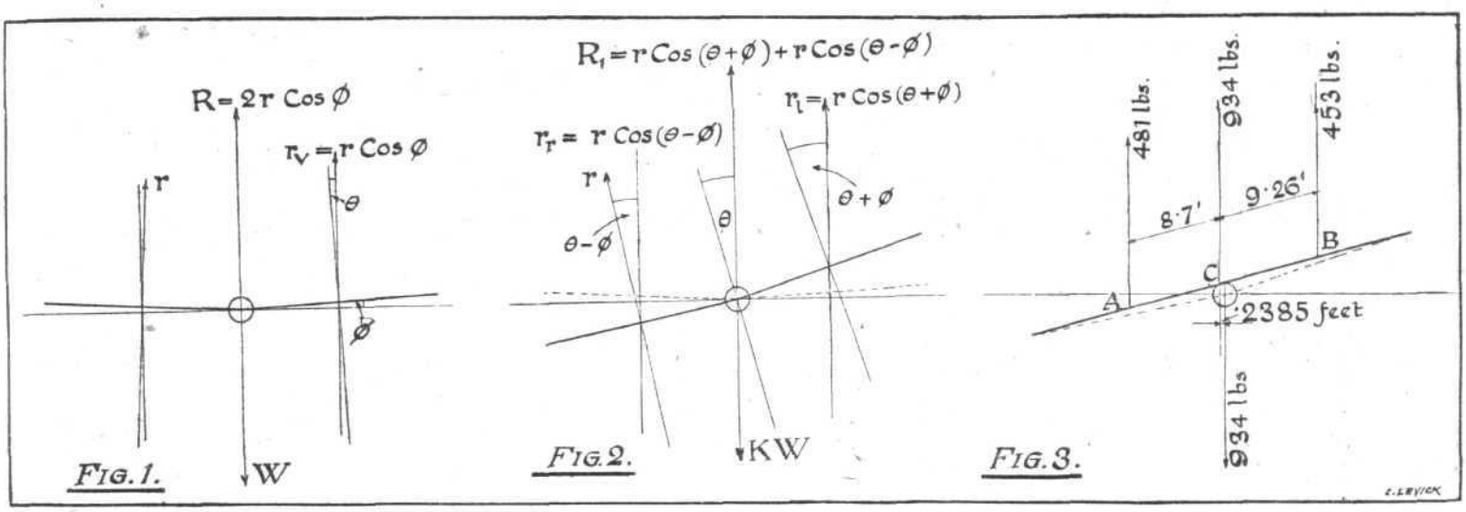
FLIGHT

LATERAL STABILITY IN AEROPLANES.

By C. LEVICK.

THE stability of an aeroplane as built to-day is almost in the hands of the pilot. By governing the controls he alters the aerofoils, rudder and elevators, in such a manner as to cause forces to come into play which neutralise those created by the wind and the varying density of the air.

Apart from special machines designed to be automatically stable, such as the Dunne biplane, or the original Fokker monoplane, there are remarkably few devices invented which tend to give stability. One of the best known and most used methods of gaining lateral stability is the practice of setting the aerofoils at an angle—called the dihedral angle—to the horizontal. This angle is as a rule very small, varying from 2° to 5°, but in spite of this has a great effect on the behaviour of the machine. It has stood the test of time well, having been employed constantly since the early days of aviation, when it was one of the distinctive points of both the Antoinette and Blackburn monoplanes.



It is interesting to note the effect of a roll on a machine with wings constructed as explained above, the dihedral angle being ϕ degrees.

Fig. 1 shows how a part of the normal reaction of the air on the wings is lost, so that one of the disadvantages of the dihedral angle is that it decreases the efficiency of the aerofoil. This effect, however, is very small, amounting to something less than 1 per cent. for an angle of 3 degrees, and is therefore almost negligible.

Fig. 2 shows a machine having been canted through an angle θ degrees by some force, and indicates the vertical thrusts on the wings It will be seen that the lower wing has moved through a smaller angle than the higher one in relation to the horizontal plane, and is therefore giving a greater vertical lift.

The thrust on the lower wing is $r Cos\ (\theta - \phi)$ and on the high $r Cos\ (\theta + \phi)$, or on the left and right respectively, presuming the machine to be moving forward perpendicularly to the plane of the paper.

One of the effects of this unequal lift on the wings is to set up a couple, which tends to bring the planes back to their original position. An analogy is the action of the see-saw, the loaded end of which, having been displaced, is being brought back to a level position by a force which is automatically getting less and less, but is zero only when the board is horizontal.

It is difficult to find the dimensions of the couple that may be relied upon, but the result worked out below is probably a normal example. Viz.:—

Let S = span of each wing in feet.
C = chord of each wing in feet.
A = area of each wing in square feet.

Then A = SC square feet.

If the velocity of the machine is such as to cause a lift of 5 lbs. per square foot and r is the total lift or thrust in lbs. normal to wing surface.

Then $r = 5$ SC lbs.

If S = 18 feet and C = 6 feet.
$r = 5 \times 18 \times 6 = 540$ lbs.

If the dihedral angle $\phi = 3°$.

Then vertical lift for each wing in Fig. 1—
$r = r Cos \phi = 540 \times .9986 = 539$ lbs.

Now in Fig. 2, suppose $\theta = 30°$,

Then vertical lifts for left wing—
$r = r Cos\ (\theta + \phi)$.
$= 540\ Cos\ 33° = 540 \times .8387$.
$= 452$ lbs.

And for right wing—
$r = r Cos\ (\theta - \phi) = r Cos\ 27°$.
$= 540 \times .8910$.
$= 481$ lbs.

Showing a difference of 28 lbs.

From the above results it is an easy matter to find the resultant of these two unequal-like parallel forces, and thus to find the couple. The best method is to draw a diagram, such as Fig. 3, but to a very large scale, and thus measure the distances AC and AB.

Those given, however, were calculated and are more exact, although of no more value than an approximate result found by taking AB equal to 18 ft., owing to the very small variation for small and practical value of θ. The couple is $934 \times .2385$ lbs. ft. or 223 lbs. ft. It should be noticed that the total vertical thrust when the machine is not level is less than when in the normal position, and also that in the example given the centre of gravity of the machine was supposed to be at the intersection of the wings, whereas in practice it is rather lower down.

◈ ◈

Feeding Refugees by Aeroplane.

IT now appears that when during the Turkish advance in North-West Persia some thousands of refugees were isolated in the Urumia region, the British succeeded in establishing communication with them by aeroplane and endeavoured, though unsuccessfully, to send a relief convoy.

THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS.

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916).

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The Lords Commissioners of the Admiralty and the Army Council having signified their approval, THE ROYAL AERO CLUB has instituted and is administering this Fund for the benefit of Officers, Non-Commissioned Officers and Men of the Royal Air Forces who are incapacitated on active service, and for the widows and dependants of those who are killed.

Subscriptions.

	£	s.	d.
Total subscriptions received to Oct. 8th, 1918..	13,436	0	8
South Western Area Recreational Training Association, Headquarters, Royal Air Force, Salisbury (Third contribution, making a total of £418 16s. 1d.)	94	5	7
Staff and Workers of Gwynnes, Ltd. (Seventy-second contribution)	8	14	4
Sir W. G. Armstrong, Whitworth and Co., Ltd.	1	0	0
Total, October 15th, 1918	13,540	0	7

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

THE ROLL OF HONOUR

(When an Officer is seconded from the Army, his unit is shown in brackets.)

Published October 8th.

Previously Missing, now reported Killed.

Perkins, Sec. Lieut. J. F. R. I.

Published October 9th.

Killed.

Griffin, Lieut. E. W. (Glouc.).
Hepburn, Sec. Lieut. R. V.
Hodgson, Lieut. R. E.
O'Reilly, Lieut. R. H. (Can. Eng.).
Rogerson, Sec. Lieut. G. C.
Tomlin, Sec. Lieut. A.

Previously Missing, now reported by German Government Killed or Died of Wounds.

Kinton, Lieut. C. E. (Nova Scot.).

Died.

Galbraith, Capt. C. F.

Wounded.

Ball, Lieut. C. R.
Belcher, Sec. Lieut. L. C.
Clegg, Lieut. E. C., M.C. (Wilts.).
Eteson, Sec. Lieut. L.
Harris, Sec. Lieut. A. E.
MacKinnon, Sec. Lieut. J. M.
Sedore, Lieut. F. A.
Sharp, Sec. Lieut. J. P.
Staton, Capt. W. E., M.C.

Missing.

Asbury, Capt. E. D.
Bennett, Lieut. H. J.
Browne, Sec. Lieut. G. E. M.
Carlin, Capt. S. (R.E.)
Conover, Lieut. C. C.
Coope, Lieut. N. N. (L.N.L.).
Dandy, Sec. Lieut. J. M.
Davenport, Sec. Lieut. D.
Gillman, Sec. Lieut. B. T.
Harrison, Sec. Lieut. W. W.
James, Lieut. L. R. (B.C. Regt.).
Heebner, Lieut. C.
Hyde, Sec. Lieut. A. N.
MacDonald, Lieut. R. M. (Man.).
Mantle, Sec. Lieut. H. S.
Newson, Sec. Lieut. D. A.
Noel, Lieut. H. C.
Pretty, Sec. Lieut. H. J.

Correction:

Killed.

Kidmarsh, Lieut. J. M. (D. of Well.), *should read* Tidmarsh, Lieut. J. M. (D. of Well.).

Previously Missing, now reported Prisoner in German hands.

Gilmour, Lieut. L. C. (Sask. R.).

Published October 10th.

Killed.

Blackie, Lieut. A. W.
Clark, Sec. Lieut. S.
MacLean, Lieut. A. P. (R. Scots).
Morris, Capt. N. P.

Died of Wounds.

Browning, Sec. Lieut. F. A.
Machin, Sec. Lt. R. F. C. (Aus. F.C.).

Previously reported Wounded, now reported Died of Wounds.

Aldred, Sec. Lieut. W. B.

Cadets Killed.

Burt, T.
Denton, J. E.
Evans, E. H.
Heritage, E. W.
Iddon, S. R.
Jones, L. S.
Jones, W. R.

Wounded.

Cockman, Lieut. H. J.
McKeever, Sec. Lieut. S.
Oliphant, Sec. Lieut. J. L. McI.
Poulton, Sec. Lieut. M. J.
Preston, Lieut. J. C.
Wood, Sec. Lieut. E.

Missing.

Abrahams, Sec. Lieut. C. R. G.
Bartlett, Sec. Lieut. G. R.
Buckby, Sec. Lieut. R.
Cook, Lieut. F. O.
Cox, Lieut. G. (Aust. F.C.).
Furguson, Sec. Lieut. J. S.
Gilbert, Lieut. S. C.
Gillett, Sec. Lieut. W. H. C.
Harper, Sec. Lieut. G. V.
Heyes, Sec. Lieut. A. C. (R. Fus.).
Jeffers, Lieut. J. P. (Aust. F.C.).
Lindley, Capt. A.
Lloyd, Lieut. C. B. E.
Malcolm, Lieut. O. L.
Orange, Sec. Lieut. H. S.
Peel, Sec. Lieut. J. C. (Aust. F.C.).
Pretty, Sec. Lieut. R. C.
Provan, Sec. Lieut. A.
Robinson, Sec. Lieut. A. J.
Sharp, Sec. Lieut. C. H. (Norf.).
Swann, Sec. Lieut. T. H.
Welchman, Capt. P. E., M.C., D.F.C. (K.O. Sco. Bord.).

Published October 11th.

Killed.

Birrell, Sec. Lieut. A. E.
Bruce, Lieut. N.
Crochett, Lieut. W. J.
Lord, Lieut. E. O.
Walsh, Lieut. P. G. (Aus. F.C.).

Previously Missing, now reported Killed.

Francis, Sec. Lieut. W. G. (R.F.C.).

Died of Wounds.

Spargo, Sec. Lieut. P. G.

Wounded.

Anderson, Sec. Lieut. E.
Coombs, Lieut. W. E. C.
Durie, Sec. Lieut. J.
Gordon-Bennett, Lieut. R. (H.C.).
McCormack, Lieut. G. (R. Ir. Rif.).
Moore, Capt. G. N.

Missing.

Armstrong, Sec. Lieut. R. H.
Brooke, Lieut. L. S.
Brown, Sec. Lieut. J. W.
Burnett, Sec. Lieut. R. R.
Cavers, Lieut. J. P.
Cosgrove, Sec. Lieut. A. V.
Crawford, Capt. C.
Crossley, Sec. Lieut. H.
Cullen, Lieut. A. A.
Dunlop, Sec. Lieut. G. B.
Dunn, Sec. Lieut. J. B.
Elwig, Sec. Lieut. H. J. C.
Gross, Lieut. C. R. (Manit.).
Harrison, Sec. Lieut. C. A.
Parkinson, Lieut. J. A. (R. Lanc.).
Read, Sec. Lieut. S. C.
Robinson, Lieut. W. F. R.
Sanderson, Sec. Lieut. C. B.
Stern, Sec. Lieut. L. G.
Strange, Capt. G. J. (Dorset).

Published October 12th.

Killed.

Driver, Lieut. H. W.
Dudley-Scott, Lieut. H. K.
Hawkeswell, Lieut. L. B. (W. Yorks.).
Lind, Sec. Lieut. J. V.
McDougall, Sec. Lieut. B. C.
Stevens, Sec. Lieut. A. J.

Missing, believed Drowned.

Shier, Sec. Lieut. M. R.
Whitehead, Lieut. J.

Wounded.

Abraham, Sec. Lieut. J. B.
Chinery, Sec. Lieut. B. V.
Finch, Sec. Lieut. W. E.
Gadd, Lieut. M. E.
Gardiner, P.F.O. T. J.
Gates, Capt. G. B.
Jenkinson, Lieut. R.
Lally, Capt. C. G.
McCloughry, Capt. E. J. (Aus. F.C.).
McKenzie, Lieut. J. V.
Ormerod, Capt. G. L.
Pernet, Lieut. E. G.
Voght, Sec. Lieut. A. A. E. (King's L'pool. R.).
Young, P.F.O. J. R.

Missing.

Brett, Sec. Lieut. W. A.
Eyre, Lieut. A. N. (Sher. For.).
Fulford, Lieut. E.
Harvey, Sec. Lieut. E. S.
Pym, Lieut. F. G.
Smith, Sec. Lieut. L. G.
Thornton, Sec. Lieut. W. R.
Turner, Sec. Lieut. F. E. (W. Yorks.).
Walker, Sec. Lieut. H.

Interned.

Fisher, Sec. Lieut. C. C.
Kingham, Sec. Lieut. R. L.
Locke, Sec. Lieut. C. J.
Oakley, Sec. Lieut. R. S.
Olorenshaw, Sec. Lieut. J.

Published October 14th.

Previously Missing, now reported Died of Wounds as Prisoner in German hands.

Stanton, Lieut. V. G.

Previously reported Prisoner, now reported Died of Wounds as Prisoner in German hands.

Edmonds, Sec. Lieut. E. P. P.

Published October 15th.

Killed.

Anderson, Lieut. G.
Ashwin, Lieut. G. A. J.
Butterworth, Sec. Lieut. F. (W. Yorks.).
Band, Sec. Lieut. R. F. G.
Calderwood, Sec. Lieut. D. M.
Caldwell, Sec. Lieut. R. R.
McGibbon, Sec. Lieut. D. H.

Previously Missing, now reported Killed.

Woolhouse, Lieut. F. S. (Aus. F.C.).

Wounded.

Allan, Sec. Lieut. C. M.
Cooke, Lieut. W. (W. Yorks).
Dickens, Sec. Lieut. G. J.
Eyres, Lieut. L. H.
Hunter, Sec. Lieut. R. F.
Kennan, Sec. Lieut. S.
McLeod, Sec. Lieut. R. L.
Matthews, Sec. Lieut. H. M.
Nicole, Sec. Lieut. J. (Rif. Brig.).
Speaks, Lieut. J. C.
Symes, Sec. Lieut. A. L.
Westall, Lieut. A. (Manch. (T.F.).
Wilkinson, Sec. Lieut. C.

Missing.

Johnson, Sec. Lieut. W. J.
MacKenzie, Lieut. G. O.
Manley, Sec. Lieut. P. S.
Sheldrake, Sec. Lieut. A. T. (H.L.I.).
Shum, Sec. Lieut. B. G.
Thompson, Capt. S. F. H., M.C., D.F.C.
Thomson, Sec. Lieut. D. A.
Tolman, Sec. Lieut. C. J.
Wilcox, Sec. Lieut. C. H.

FLIGHT

GERMAN BAROGRAPH No. 1623, RANGE 0 TO 8,000 METRES.

Issued by the Technical Department (Aircraft Production), Ministry of Munitions.

A GENERAL description of the instrument is not required, as the drawings are sufficiently clear. The instrument itself is mounted on a right-angled frame formed of a single aluminium piece, so that it can be placed into a box like a drawer. It is secured by a blade spring.

It can be taken out with one hand by passing the last three fingers through the handle and, at the same time, raising the locking spring with the thumb.

Notes on Detail.

Hanging Support Box.—The construction is simple and of ply wood, the workmanship and finish are sufficiently good for the purpose. A correction table is mounted on the outside of the box, and is protected by a celluloid plaque attached by nails.

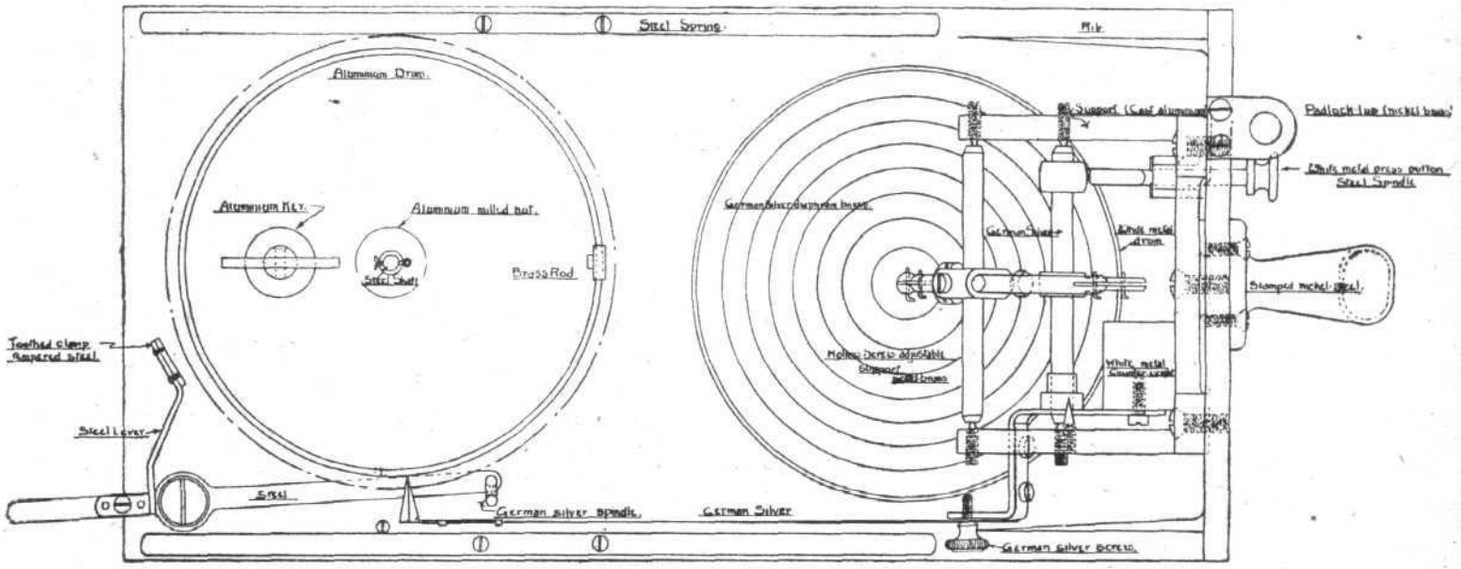
The elastic supports seem to be good, but clumsy; from the state of the apparatus after use it may be deducted that the elastic employed is not strong enough.

Aluminium Frame.—Shape is practical and satisfactory.

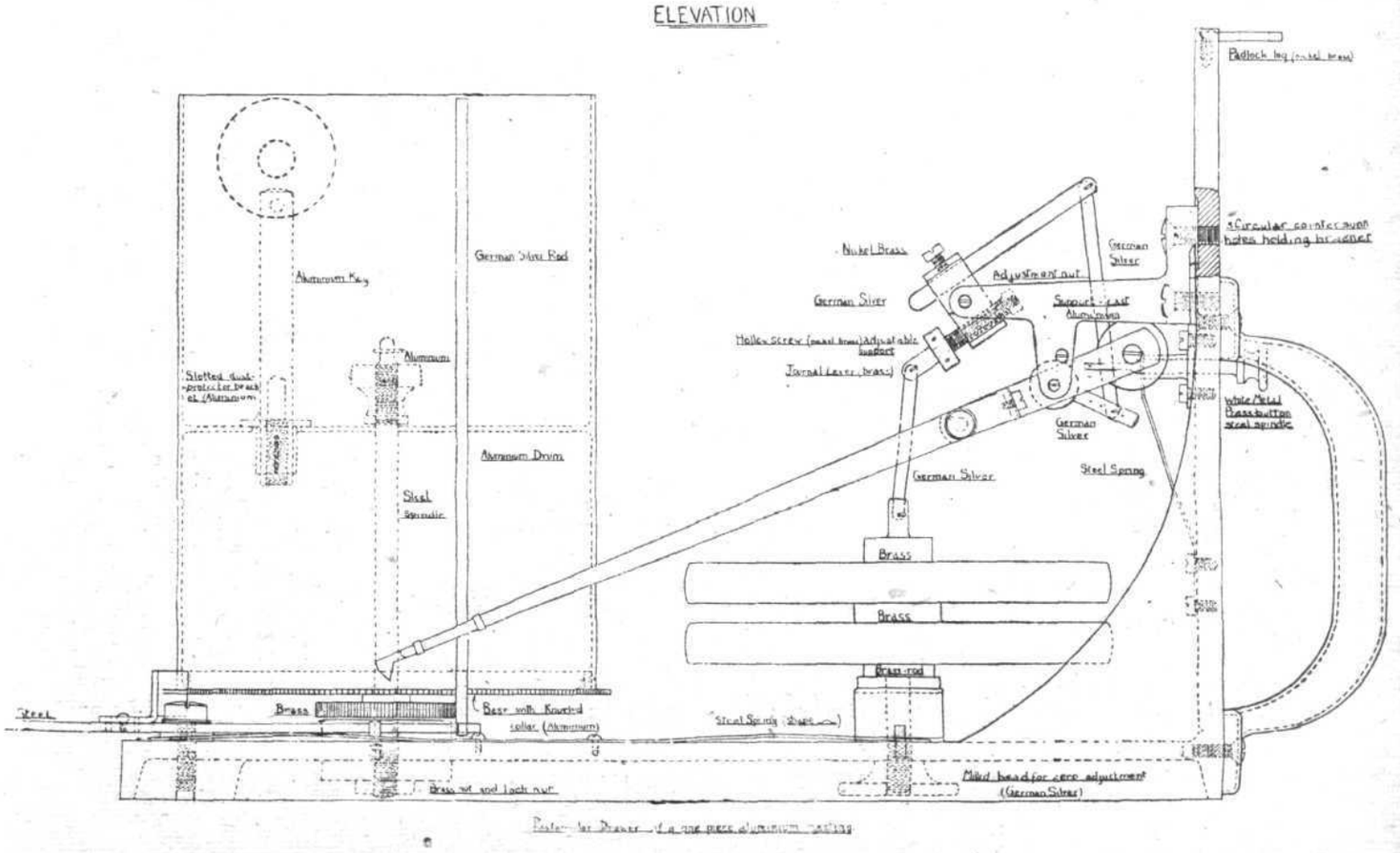
Cylinder.—Very high; easily read up to 5,000 metres (more than 1 mm. for 100 metres of altitude).

Clock Movement.—The regulator is inside. The screw winding key cannot work loose, and has a bracket at its base which seems to have no other object than that of preventing dust from entering the interior of the drum.

Drum Brake.—The contact of the pen with the drum is



ELEVATION

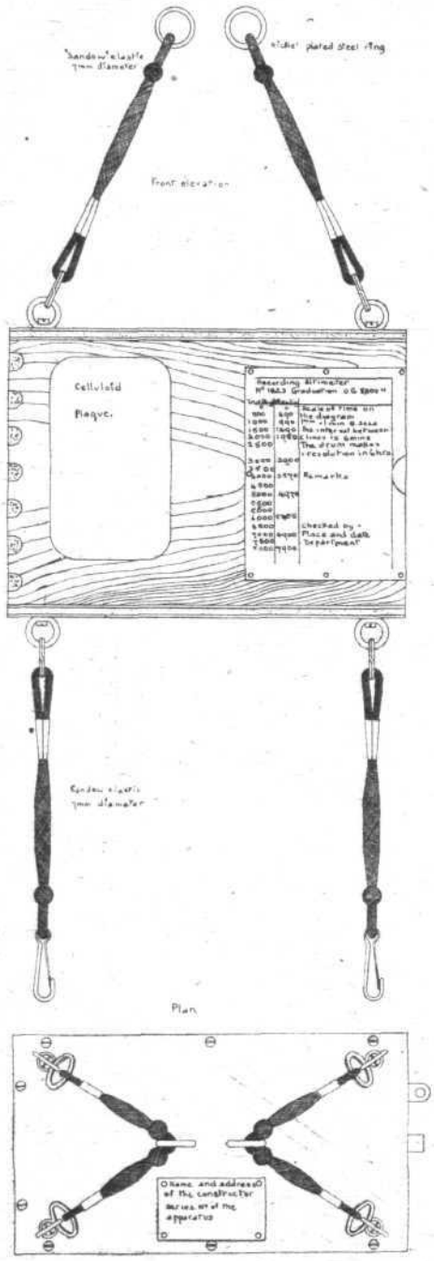


Frame for Drawer of a one piece aluminium casting

broken by means of a lever, the end of which protrudes from the wooden box. At the same time a further lever, bearing a steel clamp, is applied to a knurled collar at the base of the drum and stops its rotation.

The idea is good but the design is poor, for when the steel jaw rests too lightly on the flange the drum continues to revolve for some time. This causes the aluminium flange to become worn, and a detrimental effect is produced in the clock movement which has extra work to do.

Levers.—The general system is very simple, and may be



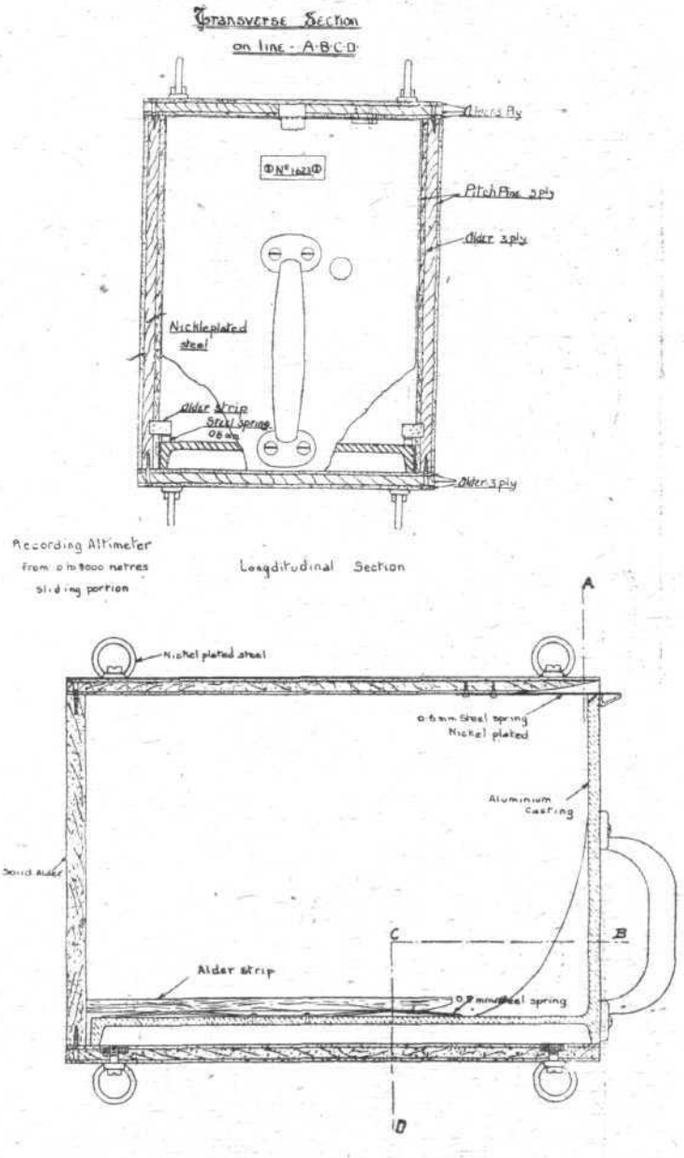
easily adjusted ; but the joints have too much play, a defect which could have been avoided by more careful workmanship.

Button Press.—When the button is pressed the flattened end of its spindle juts out on to the top part of a little drum of soft white metal, thus imparting to it a slight rotary motion, which acts upon the whole system and consequently upon the needle.

The idea is good in practice, but has one great defect. The spindle of the button is too rigid, and, in spite of the amount of play it has, produces a rough reaction upon the pivot supporting the white metal drum. The flattening of the spindle, although insufficient for the purpose, only seems to have been devised with a view to avoiding this disadvantage.

Diaphragm Boxes.—The diaphragm boxes are very large (diameter 72 mm.), which facilitates manufacture and adjustment. Possibly also another result is a greater sensibility, but it seems that large diaphragm boxes have been adopted especially to obtain the range of 0 metres to 8,000 metres, without having too large a movement of the levers, which would increase wear.

Zero Adjusting Button.—This button, placed under the frame, allows the diaphragm boxes to be displaced vertically.



Consequently the needle may be moved in order to put it at zero.

This knob cannot be turned when the instrument is in its box and placed in position, but it is within easy reach when the instrument has been taken out of its box.

Conclusion.—This instrument has been put on the market without useless and costly finish. It has been fairly well thought out as regards its practical application for a settled purpose, but certain parts are not sufficiently well made. The play of the levers is too extreme to be put down to the effects of wear or of landing.

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Air Work in Palestine.

WRITING from Damascus on October 3rd, Mr. W. T. Massey says that wherever the Arabs camped enemy aeroplanes bombed them, flying low and using machine guns. At one period near Deraa the enemy planes made frequent bombing raids in an attempt to prevent the complete disorganisation of their railway service.

The work of the Air Service was most praiseworthy. The difficulty experienced by the cavalry of keeping contact with the vast front was overcome by the untiring energies of airmen, who, far from their aerodromes, recorded the positions of our troops as well as the enemy's and dropped reports. Petrol was carried by spare machines to those operating on the front. One pilot for four days had an average of eight hours' flying a day. On occasions he had to fly low, and was subjected to heavy machine-gun fire. His machine returned from one expedition with 74 bullet holes in it, but it had not been hit in a vital part.

FLIGHT
AIRCRAFT SUPPLEMENT

IN THE HANDS OF THE ENEMY.

THE following is an official list, published in Germany, of British machines which the Germans claim fell into their hands on the Western Front during the month of July, 1918 :—

40 *Sopwith Camels, single-seaters.*
No. 9409, Sec. Lieut. Alex. M. Sutherland, dead.
No. C. 3903, J. F. Kay.
No. unknown, Lieut. Allan James Fricke, prisoner.
No. 9681, Sec. Lieut. William Saunders, wounded.
No. unknown, Lieut. Sorivener, prisoner.
No. unknown, Sec. Lieut. E. G. Reynolds, dead.
No. D 5900, Lieut. C. Brison, Ridley, prisoner.
No. D 6463, Lieut. L. L. McFaul, dead.
No. C1 5855, Lieut. Soadding, prisoner.
No. unknown, Lieut. Arthur Dr. Cyr:, prisoner.
No. of motor 2159 A 35066, Lieut. K. R. Angus, wounded.
No. of motor 2429 A 35201, name unknown.
No. D 9626, name of occupant unknown.
No. of motor 2229, occupant burnt.
No. unknown, Lieut. Josef H. Siddal, dead.
No. unknown, Maj. Mannock, dead.
No. 1891, Lieut. Travers, prisoner.
No. unknown, Sgt. D. Tottmann, prisoner.
No. unknown, L. H. Gilmour.
No. of motor 2040, occupant dead.
No. 5, occupant prisoner.
No. R 18598, Lieut. Skudamore, dead.
No. unknown, Sec. Lieut. C. J. Brown, wounded.
No. 18942, occupant prisoner.

In the case of 16 Sopwith Camels the numbers of the machines and the names of the occupants could not be ascertained.

27 *S.E.5 single-seaters.*
No. C 1089, occupant dead.
No. 1960, name of occupant unknown.
No. 46868, Lieut. Robertson, dead.
No. unknown, Lieut. Marshall, wounded.
No. unknown, Lieut. Garret.
No. unknown, Lieut. Franklin, dead.
No. D 6910, Lieut. R. H. Grey, prisoner.
No. A 3, name of occupant unknown.
No. E 5948, Lieut. Alexander M. Roberts, prisoner.
No. unknown, Sec. Lieut. S. D. Roy, dead.
No. 6183 D, occupant wounded.
No. unknown, Capt. Burge, dead.
No. 1929, Lieut. W. R. Henderson, prisoner.
No. 6098, Lieut. Mulray, dead.
No. 15107, occupant dead.
No. 20029, occupant dead.
No. E 3921, Lieut. von Tillburg, E.J., prisoner.

In the case of 10 S.E.5's the numbers of the machines and the names of the occupants could not be ascertained.

14 *Sopwith single-seaters.*
No. D 9478, occupant wounded.
No. B 7874, Lieut. Laurie, prisoner.
No. 1870, occupant unknown.
No. 1819, Sgt. Lehnert, prisoner.
No. 23341, R. C. Nelson, prisoner.
No. D 6681, occupant prisoner.
No. A 42 P 321, A. J. Bradford, dead.

In the case of 7 Sopwiths the numbers of the machines and the names of the occupants could not be ascertained.

9 *Sopwith Dolphins, single-seaters.*
No. C 3871, Capt. Hugh Victor Puckridge, prisoner.
No. D 8160, Lieut. A. Fuchnell, wounded.

In the case of 7 Sopwith Dolphins the numbers of the machines and the names of the occupants could not be ascertained.

1 *D.H.5 single-seater.*
No. 6060, occupant dead.

20 *D.H.4, two-seaters.*
No. unknown, Lieut. Norden, Lieut. Body, both prisoners.
No. of motor 24110, Lieut. Andres Moore, prisoner ; Lieut. Cobden, dead.
No. A 7876, names of occupants unknown.
No. unknown, Lieut. Arley, wounded.
No. A 7862, Lieut. Taissade, Sergt. L. G. Vredenburg, both wounded.
No. 6048, Ph. Dietz, Lieut. C. W. Bathi, both dead.
No. 2374, both occupants prisoners.
No. 1253, Charles Herax, R.A.F., Druster ; both wounded.
No. G 9276, names of occupants unknown.
No. of motor 2038, 2388, Lieut. H. W. Burry, prisoner ; Lieut. Dichensen, dead.
No. P 9247, occupants prisoners.
No. 7939, both occupants prisoners.
No. D 7234, Samuel John Oliver, Alfred William Davis, both wounded.

In the case of 7 D.H. 4's the numbers of the machines and the names of the occupants could not be ascertained.

5 *D.H. 9's, two-seaters.*
No. 3953, Lieut. M. Jos. du Cray, wounded ; Lieut. Wilding, dead.
No. 1046, occupants prisoners.

In the case of 3 D.H. 9's the numbers of the machines and the names of the occupants could not be ascertained.

14 *B.F., two-seaters.*
No. D 8090, names of occupants unknown.
No. unknown, Lieut. Bruce Sinclair Hillis, Sergt. Stanley Jean Pratt, both dead.
No. C 1002, J. A. Chubb, J. Borwein, both prisoners.
No. B.F.C. 974, Lieut. Battay, Sec. Lieut. Gondre.
No. C 4604, Sgt. H. D. Aldridge, W. Sansome, both prisoners.
No. of motor 1223, both occupants dead.
No. C 4630, occupants wounded.
No. 1177, Lieut. Charles Eaton, Lieut. Fatnall, both prisoners.
No. 58432, Lieut. Dichensen, dead ; Lieut. U. H. Kane, wounded.

In the case of 5 B.F.'s the numbers of the machines and the names of the occupants could not be ascertained.

2 *Handley-Pages.*
The numbers of the machines and the names of the occupants were not ascertained.

1 *Sopwith two-seater.*
No. 292, Lieut. Jouffreau, Sarvey, both prisoners.

1 *F.E. two-seater.*
No. 3779, Lieut. Vosper, Lieut. Smith, both prisoners.

1 *R.E.*
No. 5090, both occupants dead.

1 *Bristol.*
No. of motor 245, names of occupants unknown.

1 *Large Fighter* (Groszkampfflugzeug.)
No. unknown, Lieut. A. R. Jones, Sgt. J. Th. Ayre, Sgt. G. Harvey, prisoners.

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Wings for R.A.F. Officers Only.

AN Army Council Instruction (1110 of 1918) states that pilots' and observers' "wings" are now badges peculiar to the Royal Air Force, and are to be worn by Army officers only when serving with the R.A.F. They will not be worn by officers after return to the Army.

Damage by Enemy Air Raids.

THE Committee on War Damage, which is not an official body, is about to present to the Government returns of casualties which have resulted from the enemy raids by aircraft and bombardment. The returns are from areas having a population of more than 1¼ million. Town clerks and clerks of urban and rural areas which have been attacked, and from which returns have not been received, are asked to send the returns to the honorary secretary of the committee (Mr. W. H. Southon), 40 Chancery Lane, London, W.C. 2. The particulars included in the returns are—(1) Date of each attack ; (2) number killed ; (3) number wounded ; (4) estimated cost of making good damage to property. Information is also desired of cases where there were attacks and no material damage was done.

2,000 Turks Captured by Aeroplanes.

AEROPLANES south of Amman secured the surrender of 2,000 Turks, says Mr. W. T. Massey writing from Damascus. A pilot, catching sight of a long, drawn-out column, dropped a message, saying that if they did not surrender they would be bombed. He returned to his aerodrome with no answer. Six machines then went up with bombs. While they were circling over the troops a ground signal was laid out recalling them. The Turks raised the white flag, and came in to be taken prisoners.

AIRISMS FROM THE FOUR WINDS

CURIOUS how rumours get about. At least the assertions that Dope Monopoly interests were intimately concerned in the purchase of the *Daily Chronicle* gave those coupled up an opportunity of denying the soft impeachment.

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CURIOUS but possibly only coincident, that it was the *Daily Chronicle* which gave such considered criticism to the Special Government Committee's revelations upon the Dope dope.

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CURIOUS coincident that those criticisms got shut off so suddenly awhile ago.

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AIRCRAFT workers on strike, out and in again last week, over the objection-to-a-dismissal stunt. It's a rotten record one way and another, especially having regard to the fact that none of them could have been experts at their work for more than ten or twenty years before the War.

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FUNNY how some of these sort of things happen. "Gallant denied that one had any intention of agitating for a strike."

Three-quarter front view of the type G2 Gotha bomber.

CURIOUS coincident that the following inspired, if not official information, should be published at the time of the rumours as to the purchasers of the *Daily Chronicle* :—

The Dope Inquiry.—The Committee, consisting of Lord Sumner (chairman), Lord Inchcape, and Lord Colwyn, appointed to investigate the affairs of the British Cellulose Co., have been making inquiries at the company's new vast works in process of completion near Derby. It is not expected that the investigation will be finished for some time yet, as new evidence is being collected. The office of the Committee is Committee Room No. 4, House of Lords, S.W.1.

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WHICH leads one to wonder how that Dope Inquiry really *is* progressing and how long it will be considered safe to let it sleep, for the inconvenient facts to be buried in convenient oblivion. It is to be hoped even the alarums of War—and peace—will not allow this.

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AN attempt to get a lead on in commercial aviation looks like materialising in the United States, the birthplace of flying under power. Already the mail air service is being conducted under serious conditions, and the next move is to

So runs the reported plea of a defendant who on Friday last was at a London police court fined £5 or 21 days for inciting the girls in a large Outer London Royal Air Force store to strike for higher wages.

What on earth did she think she was doing then? Quite rightly, the magistrate, in dealing with the case, intimated that if any more girls from the store were brought before him for a similar offence it was prison, without the option, that would be meted out.

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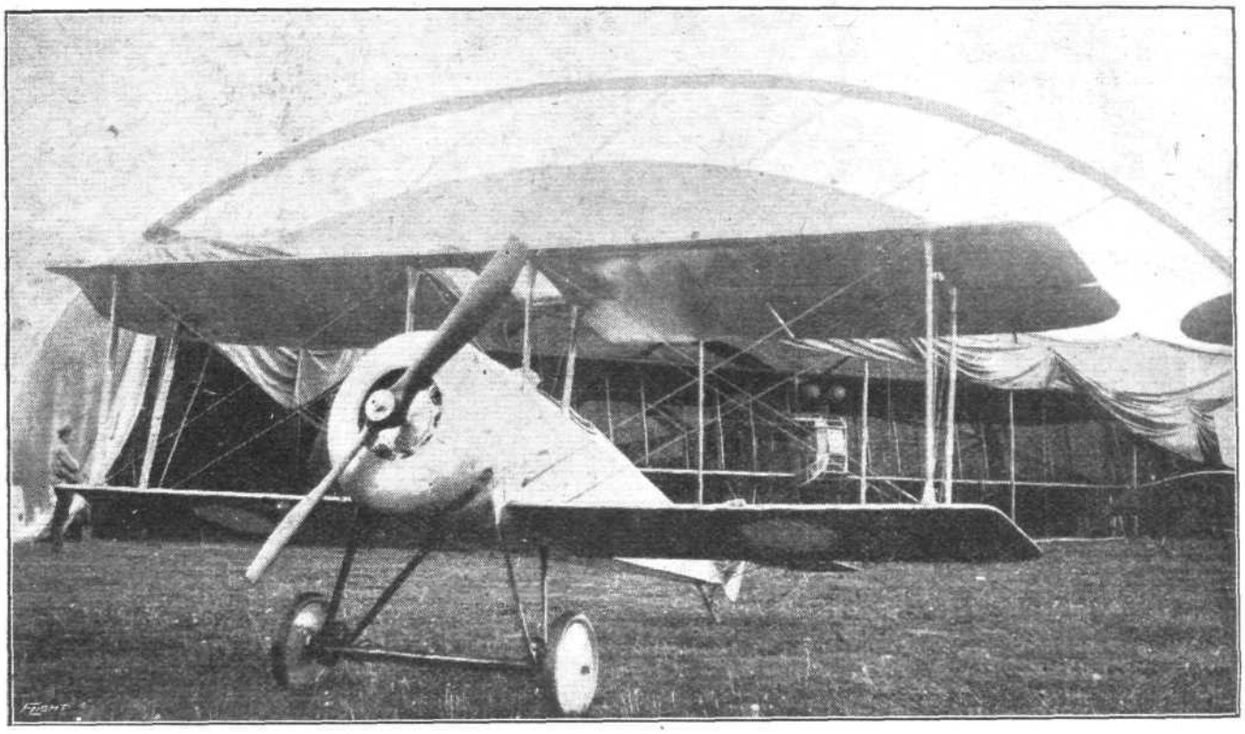
SIDE VIEW OF A GOTHA BOMBER.—This machine is one of the older type with four-wheeled undercarriage. In more recent machines of this make an additional pair of wheels has been added to each undercarriage. On the right the machine is seen in the air.



THE SIKORSKY SCOUT.—Three-quarter front view of this machine fitted with 110 h.p. Le Rhone engine.

be an air-way across the American continent. A series of landing grounds and aerodromes at intervals of about a hundred miles is to be provided, several of these being already past the embryo stage at such centres as New York, Pennsylvania, Ohio, Illinois, Texas, Georgia and California. At each alighting ground shelter, provisions, repair shops, maps, &c., will be available for pilots, and for night landing properly illuminated systems will be established. The British turn will no doubt come in time.

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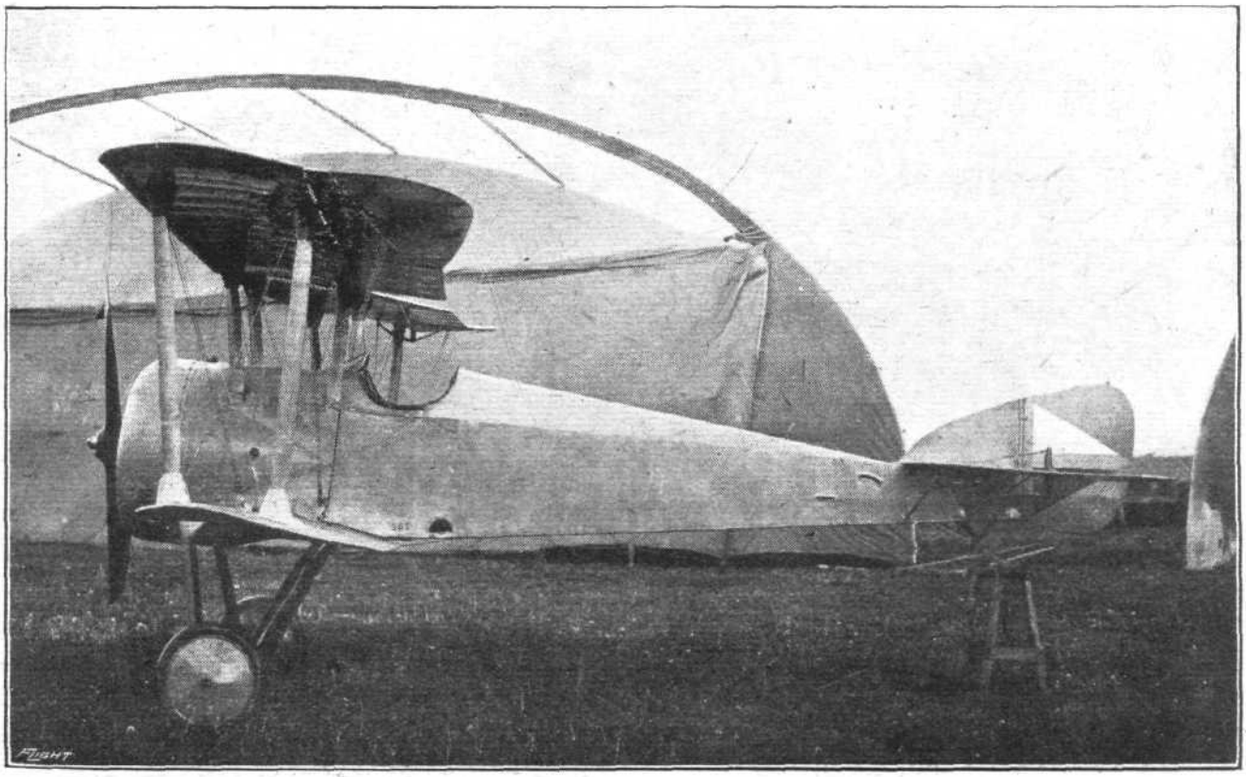
"SOMEBODY is lying." This is what Major Weber is reported to have laid down in connection with the dismissal of Commander Colomb, R.N., from the Aeronautical Department of the M.O.M. after he had written a letter to the Shoreditch Tribunal with reference to the young men slackers at Woolwich Arsenal. He said that when he was at the Arsenal the men employed in the high-explosive establishment were mostly relatives of the foreman and were "shirking." Men were being employed at high wages on work that a girl leaving school could do. The conditions were so bad that he resigned his post at £400 a year to get away from the shirkers, and took a berth at the Air Board at £250 a year. He offered to prove these statements before any authority, and sanctioned the publication of his letter.

After he had been dismissed a letter was received from the Ministry of Munitions saying that a full inquiry had been made into the allegations, which were found to be without foundation. They alleged that Commander Colomb retired because reference was made to the bad time he was keeping.

The Shoreditch Tribunal, it appears, desires that a public inquiry should be made into the facts of this dismissal, and Mr. Harwood, of the Tribunal, said he would like some M.P.



THE SIKORSKY SCOUT.—Side-view of the machine, fitted with 80 h.p. Le Rhone engine.

who has the interest of the country at heart to bring this matter before the House of Commons.

A report of the Tribunal proceedings then continues :—

Major Weber : Somebody is lying, and it looks like a Government Department. We are in this affair as we have resolutions, based on Commander Colomb's letter.

Mr. Porter : I am afraid there are a good many who are dismissed for telling the truth. He knows too much.

Major Weber : Lying in a Government Department is a very serious thing, and this is lying.

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SURELY the matter can hardly rest where it is. It should, under the circumstances, be up to the accused Government Departments to justify their action, if only in justice to the Tribunal.

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AT this juncture it is interesting to recall that as long ago as November, 1910, Mr. Walter Wellman made an attempt to cross the Atlantic in a dirigible balloon, the same machine on which he made an abortive dash for the North Pole. The machine, which was of 345,000 cubic feet capacity, was fitted with two motors of 80 h.p. and carried 1,250 gallons of petrol. In addition there was a motor of 10 h.p. as a sort of forlorn hope, in case the others expired. The drive was by two large twin propellers, and the providentially-minded inventor had slung a lifeboat underneath, fully equipped with water, food and instruments. A peculiar feature of the apparatus was a device called an "equilibrator," consisting of a kind of elongated guide rope, trailing a number of steel tanks full of fuel. The lower end of this floated in the sea, and as the machine rose or fell a greater or less weight was supported by the water. A wireless installation was also fitted. The machine came down soon after the start, and the inventor was lucky enough to be picked up speedily.

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THE HUN "UBER ALLES!"

Lust, Treachery, and Violence,
Obscenity and Arrogance,
Theft, Cruelty, and Cowardice,
Hypocrisy and Blasphemy!
All these unite in vile incest
With something undefined and worse—
Some Thing we fail to understand—
To breed hell's scum—the "Cultured" Hun!
Loathed spawn of utmost beastliness
Thy boasted day—"Der Tag"—has come!
Thy blood-soaked course is fully run:
Go "Kamerad!" beaten to thy hole
And die, abhorred by all mankind,
And "God have mercy on thy soul."

W. H. Cornford, in the *Evening Standard*.

SOMEHOW a section of the public has been apt to associate the members of the Y.M.C.A. with Conchies and fearful wild fowl of that sort. And never was a greater libel perpetrated. Many of the members are more intensely pugnacious at the smell of a Hun than the run of *blasé* Tommies who have been hog-baiting for some time. Out West—to be exact, in Pennsylvania, U.S.A.—a very virulent branch of these brave boys has awakened to the horror of the Huns' wily warisms, and the particular form in which this virulence first attracted our attention was the sight of the little "Sticker," which is here reproduced, on the back of a letter from Philadelphia.

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THE enclosure was from an old friend and aviation enthusiast, W. H. Sheehan, one of the live directors of the Aero Club, Pennsylvania, who was well in advance with another long time subscription to "FLIGHT," as "I do not wish to miss a single copy," wrote W. H. S. Continuing, he then gave us the text of the miniature poster above, and his connection therewith, as follows : "Through the suggestion and efforts of the writer we have organised a school for aeroplane mechanics in connection with the Y.M.C.A. of this city. The Aero Club of Pennsylvania is co-operating, and we are really doing fine work. How do you like our "War Yell" as shown on little stickers? According to the reports we are getting, we are helping, and our only regret is because we did not start to help two years sooner, but we are making up for lost time. With best wishes for 'FLIGHT'S' continued success, and trusting you will forward issues as noted above."

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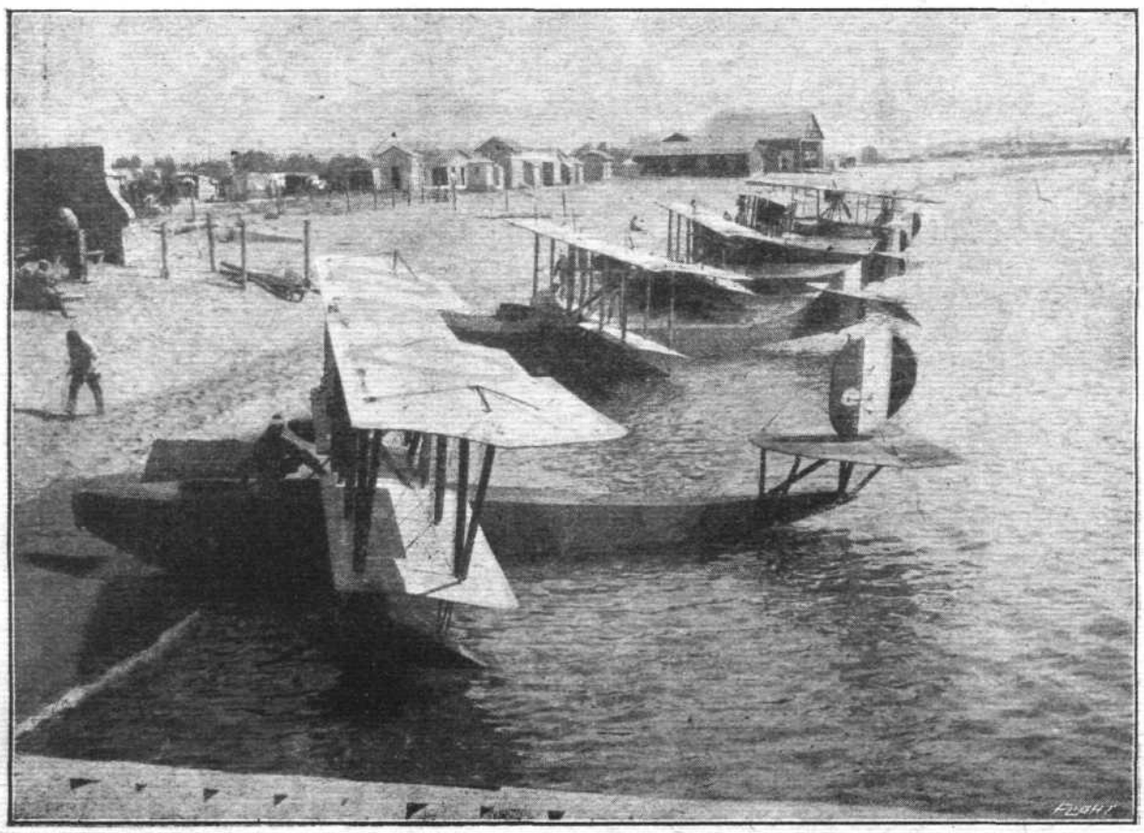
IT is a practical proposition which Mr. Sheehan has evolved, this "Y.M.C.A. School of Airplane Construction," and the circular, which sets out the *raison d'être* of the establishment, gives the main points as justification for its formation, in the following extracts :—

"In this world crisis there is no better way to serve your country than in helping to build and maintain the fleet of



French seaplanes ready for patrol work at a French Seaplane Station on the Mediterranean coast. *Ministry of Information.*

aircraft that the United States must have in order to crush the Prussian autocracy.

"The country needs trained men NOW for the construction of aircraft, and now is the time to prepare yourself for this industry. The construction of aircraft has become and will continue to be one of the great industries of the world.

"The Y.M.C.A. School of Airplane Construction trains men and women in the construction and repair of airplanes, and is conducted by the Central Branch of the Philadelphia Y.M.C.A., with the active co-operation and support of those in authority at the Naval Aircraft Factory and of the Aero Club of Pennsylvania. Two courses are offered, one for factory and the other for field mechanics.

"The Factory mechanics' course consists of demonstration and practical work in the construction of airplane parts and their assembling.

"The Field mechanics' course gives instruction in the repair and upkeep of the airplane and its power plant, consisting almost entirely of actual work on airplane construction and repair, with only enough theoretical instruction to enable the student to obtain a clear understanding of the work he is doing as it is related to the science of aeronautics .The Aero Club has agreed to open its meetings to the students of our school, and offers every assistance in its power to those who wish to continue the study of aeronautics beyond the point it is possible to reach in either of the courses"

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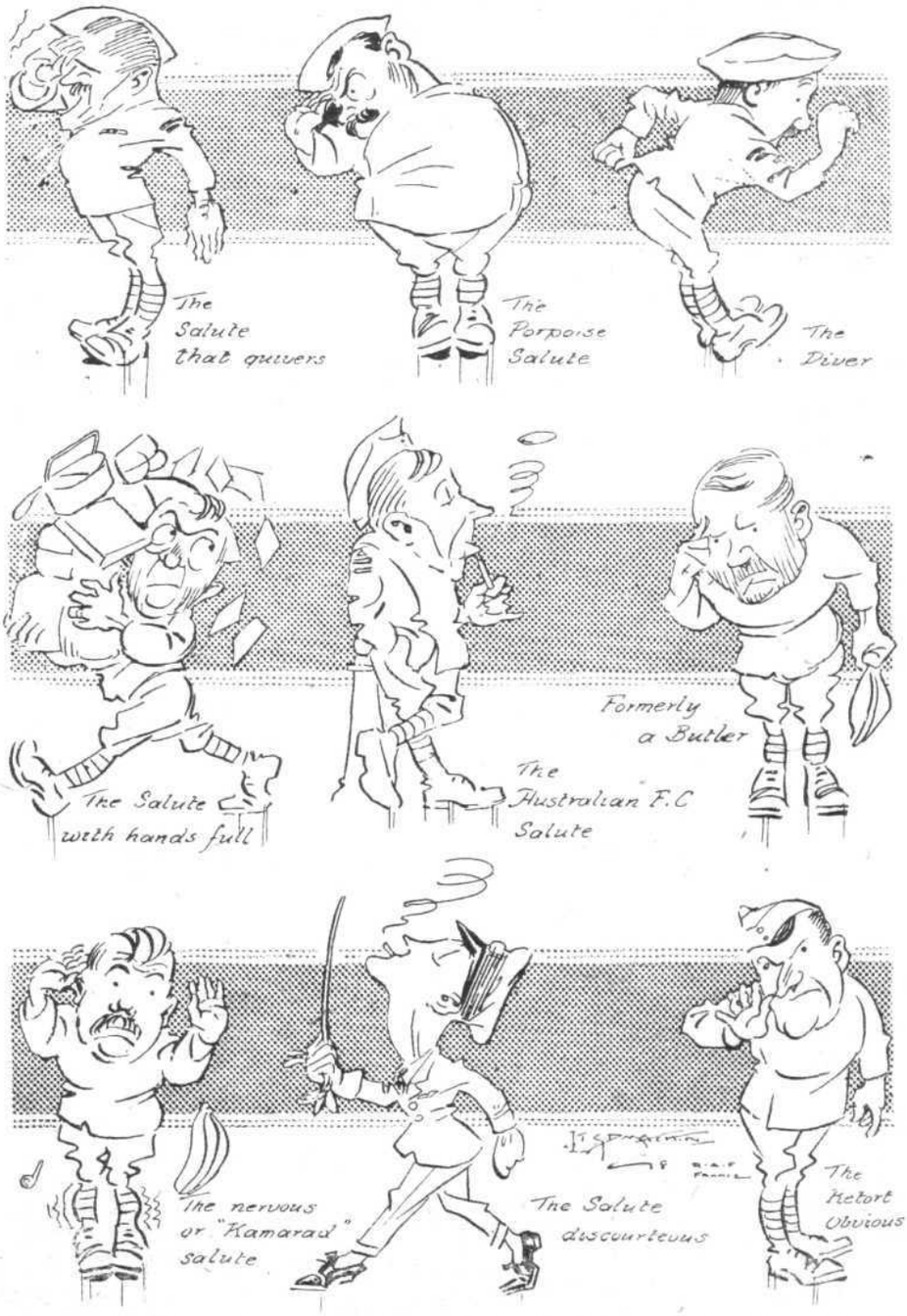
FEELING opulent the other day we strolled into Woolworths, and, evading the blandishments of the damsel who tried to sell us a dream book and a pair of rubber heels, we picked up a volume, dated 1903, from the pen of Mr. H. G. Wells.

The very first story of the series dealt with flying. The author had predicted 1907 for the conquest of the air, and his scrubby, illiterate, but terribly earnest little inventor had gone rather an interesting way to work :

"He perceived the way in which the contrasted and hitherto incompatible merits of balloons and heavy flying machines might be combined in one apparatus, which should be at choice heavier or lighter than air. He took hints from the contractile bladders of fish and the pneumatic cavities of birds. He devised an arrangement of contractile and absolutely closed balloons which when expanded could lift the actual flying apparatus with ease, and when retracted by the complicated "musculature" he wove about them, were withdrawn almost completely into the frame ; and he built the large framework which these balloons sustained of hollow, rigid tubes, the air in which, by an ingenious contrivance, was automatically pumped out as the apparatus fell, and which then remained exhausted as long as the aeronaut desired. There were no wings or propellers to his machine, such as there had been to all previous aeroplanes, and the only engine required was the compact and powerful little appliance needed to contract the balloons. He perceived that such an apparatus as he had devised might rise with frame exhausted and balloons expanded to a considerable height, might then contract its

Salutes on Our Aerodrome.



balloons and let the air into its frame, and by an adjustment of its weights slide down the air in any desired direction. As it fell it would accumulate velocity and at the same time lose weight, and the momentum accumulated by its down-rush would be utilised by means of a shifting of its weights to drive it up in the air again as the balloons expanded."

All this seems a quaint conceit enough nowadays, when men take the air as placidly as they would a taxicab. Yet if Jules Verne were living to-day he could plead justification for some of his wildest imaginings.

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AN inventor happened in the other day. (Oh yes, this often happens to us, also poets.) He demanded to see the Editor, as of assured right. With one hand, the nails of which were bitten down to the quick, he clutched a bosom manifestly bulging with plans. Our Chief, with that Jovian serenity for which he is so justly noted, deputed someone else to "see to that high-brow."

Opening fire in a rich Lancastrian accent (oh Wigan, still does the memory of thy potato cakes endear thee to us!), he gave us a *précis* of his career, which ranged from caretaker in an electric power house to promotor of an aeroplane company of stupifying possibilities (with ramifications as to detective agencies, and an ill-fated marriage bureau). This accomplished, he drew breath, and gave us his unbiassed opinion, not for publication, of the Air Board authorities. (Occasional heads popped in at the door, attracted by language so richly embroidered.)

Delicately (knowing the susceptible ways of the breed) we suggested that he come to the point. He did so. In the solitude of the mill he had hatched a project that would add, at the most conservative estimate, fifty per cent. to the speed of any aeroplane. It would enable the 'bus to hover even as a gull, the cost would be derisory, only the incredible inertia of the Vested Interests, &c., &c., had hindered its development, and the attendant sudden conclusion of the war. He touched lightly on the "'eartless capittleists." (That was the way he pronounced it, anyway.)

We pleaded for a sight of the invention, plans, data, or particulars as to models, if any had been constructed. He replied with large generalities, gave it as his opinion that we were too young to be trusted with his secret, coined a brand new and satisfying epithet for officialdom (which we could only print in a coloured supplement) and departed in a cloud of shag.

When normal life had been resumed, and the skulking technical editor had crept back to his lair, we turned up the patent. It was a multiplane arrangement, a kind of Jacob's ladder, which would stand as much chance of flying as a honeycomb.

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"MARY POSTGATE," a short story in Kipling's last volume, is strong writing and good reading, and not the least interesting thing in it is the portrait, etched with corrosive, of a German pilot.

Aerial Age Weekly.

AN ENVIABLE RECORD.—"She's a regular Ace." "I should say so! Bagged her sixth aviator."

The tale tells of a lady's companion with a grey and orderly mind, who finds herself caught in the swirl of the great war at the close of a colourless life. The crude young son of her employer to whom her withered heart had yearned is killed on a practice flight. A child of her village is wiped out of life by a bomb while she is standing near. And when a German airman is brought down, badly injured internally, close to her home, that cold dispassionate mind, remembering these things, considers what to do.

"She saw, half hidden by a laurel not five paces away, a bare-headed man sitting very stiffly at the foot of one of the oaks. A broken branch lay across his lap, one booted leg protruding from beneath it. His head moved ceaselessly from side to side, but his body was as still as the tree's trunk. He was dressed—she moved sideways to look more closely—in a uniform . . . with a flap buttoned across the chest. For an instant she had some idea that it might be one of the young flying men she had met at the funeral. But their heads were dark and glossy. This man's was as pale as a baby's, and so closely cropped that she could see the disgusting pinky skin beneath. His lips moved.

"'What do you say?' Mary moved towards him and stooped. 'Laty! Laty! Laty!' he muttered, while his hands picked at the dead wet leaves. There was no doubt as to his nationality."

She goes back to the house to get a heavy revolver that the dead boy had taught her to use.

"When she came through the rain, the eyes in the head were alive with expectation. The mouth even tried to smile. But at the sight of the revolver . . . its corners went down. A tear trickled from one eye, and the head rolled from shoulder to shoulder, as if trying to point out something. 'Cassée. Tout cassée," it whimpered. 'What do you say?' said Mary disgustedly, keeping well to one side, though only the head moved. 'Cassée,' it repeated. 'Che me rends. Le médecin. Toctor!'

"'Nein', said she, bringing all her small German to bear with the big pistol. 'Ich haben der todt kinder gesehn.' The head was still."

And she waits silently until it is dead—"dead as dear papa in the late 'eighties; Aunt Mary in 'eighty-nine; mamma in 'ninety-one; cousin Dick in 'ninety-five . . . Wynn buried five days ago; and Edna Gerritt still waiting for decent earth to hide her. . . ."

TEN YEARS AGO.

Excerpts from "FLIGHT" of October, 1908.

WILBUR WRIGHT'S GREAT FLIGHT.

On September 21st, Wilbur Wright, in the presence of a vast concourse of people, remained aloft for 1 h. 31 m. 25 s., and thereby established a record which is far ahead of the previous best—that made by his brother at Fort Meyer on September 12th. Indeed, had he desired, he could apparently, except for the darkness, have continued for a much longer period, as of 50 litres of fuel, he had still 28 litres left, and 8 litres of water remaining from the 10 litres he took up.

ORVILLE WRIGHT'S MISHAP.

At the very moment when Orville Wright, having spurted ahead of his brother Wilbur, the cup of reward which he so greatly deserves was rudely dashed from his lips by an accident. The most regrettable feature of the whole affair is, of course, that it occasioned the death of Lieut. Selfridge, an American artillery officer, who had been specially appointed to the ballooning section, but was leaving the next day for a congress at St. Joseph. He was making his first trip as a passenger on that fatal Thursday, September 17th. The aeroplane had not been aloft much more than five minutes, however, when one of the two propellers gave way, and the machine fell from a height of about 75 ft. The cause of the accident appears to have been, in the first instance, the use of extra big propellers, which had been fitted prior to that trial in order to see whether better results could not be obtained. The increased diameter (9 ft.) caused their tips to foul the rudder stay wires, and one of the propellers broke.

WILBUR WRIGHT'S PASSENGER FLIGHTS.

Of late, it has been very evident that Wilbur Wright is paying increased attention to the carrying of passengers on his aeroplane, and although the sad fatality which marred his brother's earlier efforts with strangers must have made Mr. Wilbur more wary than ever, he has, nevertheless, gone steadily ahead, and after a series of comparatively unimportant trials, finally made a sensational flight on Tuesday last, October 6th, of 1 h. 4 m. 26 s., accompanied by Mr. Arnold Fordyce as passenger, which was preceded on Saturday last, October 3rd, by a flight of 55 m. 32 s.

FLIGHT

DEFECTIVE OXY-ACETYLENE WELDS.*

By CAPTAIN D. RICHARDSON, R.F.C., Wh. Exh., A.M.I.M.E.

The use of oxy-acetylene welding has become so important and valuable that all who have the interests of the industry at heart must welcome the opportunity which meetings like this offer for the interchange of views, the dissemination of knowledge, and the development of that spirit of organisation and co-operation which are so badly needed at the present time in the welding industry.

In spite of the intensive development of the process, there is still a large body of opinion in the mechanical trades opposed to the use of acetylene welding in any shape or form, and, in addition, there are engineers who only consider it suitable for the class of work where the strength of the joint is of secondary importance.

This opposition is frequently based upon the uncertainty of the results, for it is no exaggeration to say that a large percentage of the welds made at the present time would, on examination, give rise to serious criticism.

We all know that daily some inexperienced welder is tackling a job about which he knows nothing, and failure of the joint may, in many cases, lead to accidents. This uncertainty of results is due very largely to the absence of adequate supervision and restriction, and to loose methods. It is now possible for anyone with the price to purchase welding equipment, and tackle anything that comes along.

Expert acetylene welders are few and far between. So-called "expert" welders—men who have been handling the blowpipe for several years and have classified themselves under this head, generally prove—as a scrap pile at Holloway will testify—that they have no real knowledge of the process or its development.

The proper growth of the industry depends upon it being supervised and operated by competent workmen, and perfection in this, as in any other important mechanical field, can only come about by education and co-operation; in this work, needless to say, there is immense scope for the activities of such an Association as this.

Given good apparatus and accessories the majority of acetylene welds will be more or less defective because the operator lacks the necessary technical knowledge. It is exceptional to find a skilled mechanic welding, and the unsystematic way in which the majority of welders are trained is a serious handicap to the rational development of the industry.

An illustration of the latter point is brought to mind by a recent visit to a northern Welding School. No definite plan of instruction appeared to be laid down, and the valuable time devoted to the lectures was more or less wasted in dealing with entirely relatively unimportant matters, such as the manufacture of oxygen and carbide, the sketching of details, &c. The necessary metallurgical knowledge, and methods of dealing with the various classes of work likely to be met with were missed altogether. I hesitate to mention the sad fact that the instructor had never seen a copy of the *Welding Journal*.

A further illustration is to be found in the course of instruction given at a welding school not a hundred miles from here. At least one of our members could testify that the instruction leaves very much to be desired, and the fact that the instructor wrote to me for assistance, in giving him technical points to pass on to the men, speaks for itself.

There is a whole host of points in which the skilled welder must be well versed. He must know the fundamental principles of the process and care of the apparatus; the power and position of the flame for various classes of work; the preparation and adjustment of the work so as to take care of expansion and contraction effects; the adjustment and handling of the blowpipe so that the metal is properly joined with the minimum of overheating and of change in physical and chemical properties; how to obtain a maximum efficiency from the consumption of gases; how to judge by the appearance of the metal when the methods are correct, and so on.

Skill can only be obtained by practice under proper instruction and at the expenditure of a great deal of time. The consumption of gases, filling materials, and time will be large before a man becomes thoroughly efficient. Long before he becomes an expert welder he will be able to handle in a satisfactory manner a large variety of work, but it will be some time before he can produce welds at a minimum cost.

* Abstract of a Paper read before the General Meeting of the British Acetylene Association.

It should be clearly understood that an expert welder with good apparatus, correct filling materials and the necessary metallurgical knowledge can produce welded joints on materials like wrought iron, mild steel, grey cast iron, copper, brasses and bronzes, aluminium, and certain aluminium alloys, lead and zinc, with mechanical properties approaching those of the metal joined, and in which the strength and service of the joint are absolutely reliable.

Common causes of defective oxy-acetylene welds are:

(1) Defective or badly handled generating plant yielding impure acetylene.

(2) Defective installation giving irregular delivery of gases at blowpipe.

(3) Faulty manipulation of the blowpipe.

(4) Faulty filling materials.

(5) Faulty preparation and adjustment.

(6) Faulty after treatment of welds.

This is not the time or place to do more than briefly deal with these causes; frequently the failure of a welded joint may be traced directly back to the apparatus or gases. The design and lay-out of the generating plant may be such that the acetylene reaches the blowpipe in a condition which will make the welds porous, brittle, and burnt. The importance of quality in the choice of apparatus cannot be over-estimated.

The overloading of the generating plant is very common, and is responsible for many defective welds. The maximum requirements are usually badly under-estimated, and portable plants are often installed where fixed plants working more economically and producing better gas should be given the preference. Sufficient emphasis has not been laid on the fact that overloading of a generator generally gives a gas that is saturated with tarry products, water vapour, lime dust and chemical impurities.

Assuming the generating plant is well designed and not overloaded much unsatisfactory welding may be traced to inefficient purification of the gas—an essential often overlooked. It is not difficult to agree with Mr. Charles Bingham's conclusion in "Carbide of Calcium," that not one acetylene user in ten keeps his purifier in a really efficient condition. I know of one important aeroplane works where the purifying material is changed at definite periods irrespective of the quality of gas used in that period. It should be well known that a well designed and efficiently kept purifier is indispensable for the elimination of moisture, lime dust and chemical impurities, which are a common cause of defective welds.

Faulty design or lay out of the installation may result in the acetylene reaching the blowpipe not only in an impure condition but in insufficient quantities and at a varying pressure.

The lay out of the acetylene piping in the majority of installations leaves very much to be desired, and is a cause of defective welds. The piping is frequently too small, and the considerable loss in pressure leads to aspiration of air through the hydraulic safety valve and unsatisfactory working of the blowpipe. This question of piping should receive much more serious attention on the part of installators and users of the process.

A standardised form of the Fouché hydraulic safety valve suitable for the largest size of blowpipe is badly required. Oxidised welds are common when using medium or large sized blowpipes in conjunction with certain makes of valves. It is unfortunate that with some classes of valve the charging should take place under gas pressure, and in others under atmospheric pressure. The importance of proper charging and care of hydraulic safety valves in relation to the quality of the welds obtained is not well recognised.

From the oxygen supply point of view the most prolific cause of defective welds is defective regulators. These, thanks to bad handling, get almost immediately out of order. Few welders understand the principle and consequently do not know the care that is required to keep them in good working order. Successful welding demands that the oxygen and acetylene be delivered to the blowpipe in unvarying proportions and at the correct pressure. Oxidised welds are common when using faulty or badly manipulated regulators.

Defective welds can occasionally be attributed to the flexible tubes conveying the gases to the blowpipe. If

the tubes are long the balance and good handling of the blowpipe are interfered with. Certain classes of tubing give too great a loss of pressure, and if the tubes are very flexible the character and composition of the flame tends to vary.

The oxy-acetylene blowpipe, which is apparently a simple tool, has had thousands of pounds spent on its development with a view to constructing one which will deliver the mixed gases in correct proportions and with the correct velocity. Provided the design is not faulty, defective welds are frequently caused by the use of a defective blowpipe, or by bad regulation and manipulation.

The choice of the correct size of blowpipe and its proper manipulation has a direct influence on the quality of the welds, especially in the case of steel welding.

Lack of knowledge of the structure of the flame and of the influence of different parts of the flame on the metal being joined is one of the principal causes of defective welds. There is still a host of welders who consider the white cone, or the luminous part of the flame, as the *Alpha* and *Omega* of the welding flame, and whether they are melting steel, cast iron, aluminium, copper or any metal, the part of the flame is alternately dipped in and taken out of the molten zone. Even when the welder appreciates the importance of the correct use of the flame, the question of re-regulation is overlooked, and those blowpipes in which the proportions of oxygen and acetylene do not vary appreciably with heat effects have a marked superiority owing to this general neglect of re-regulation.

Defective or unsuitable filling materials are responsible for the failure of many acetylene welds. The greatest care is essential in choosing welding rods and fluxes. It is important to note in passing that constructors are only just beginning to pay attention to the other side of the question, and to make or purchase material suitable for the application of the oxy-acetylene flame. Not only must the filling materials be of the correct chemical requirements so as to replace loss in the molten zone, or to counteract the tendency to oxidise, or assist in making the molten metal flow readily, or to break down oxides when formed, but they should act satisfactorily under the blowpipe.

Faulty preparation is responsible for many defective welds. From an oxy-acetylene welding point of view co-operation between the designer and the welder is the exception rather than the rule. One frequently sees lap welding arranged on new work, and it is difficult to get good strength or to eliminate oxide layers in such cases. The bevelling and cleaning of the parts is frequently looked on as wasted time, whereas failures due to overheating effects, burning, bad penetration, and oxide inclusions are a natural result of this neglect. Apart from the question of the strength and ductility of the welds, it is not difficult to demonstrate that it is a marked economy to carry out these important preparations.

The importance of taking care of expansion and contraction effects is not well realised. Warpage and internal strains, followed by failure at the weakest point are the common result of a welder not knowing how to deal with this problem. In castings where preheating is used for this purpose the arrangements are often unsatisfactory. The heat is given in anything but a uniform manner, and it is impossible to carry out the repair without moving the casting.

It is quite common to see work bolted to plates to prevent expansion, devices for preventing contraction, rigid jigs and clamps, and welders are more or less surprised when consequently distortion or fractures take place. It should be realised that devices such as jigs, unless specially designed for welding in position, should only be used for their main purpose, that is adjustment or tacking in position previous to welding proper.

The methods of taking care of expansion and contraction are not generally known, with the result that many welders assume that all castings must be heated all over, whereas this method is only one of half a dozen for taking care of expansion and contraction.

Defective welds are common where the proper after-treatment is not applied. The weakness of the structure of the welded area is generally very great, but few welders realise that if strong welds are required the structure must and can be restored. It is useless to attempt either the understanding of the method or its correct application unless we are certain that the fundamental principles already outlined are in practice. Thermal and mechanical treatments of the majority of defective welds will help but little. The thing to do is to first make a proper weld.

Learning the fundamentals of successful oxy-acetylene welding is not difficult. If the same study is given to the process as to any other trade, failures and defective welds will practically disappear. It does little good to prepare the work properly unless the operation is intelligently carried out. Defective oxy-acetylene welds should be viewed by engineers and others in the light of the incorrect application of the process rather than upon the process itself. If these few notes result in directing greater attention to the importance of apparatus, the preparation of work, the importance of expansion and contraction, the requirements of the welder, the after-treatment of the weld, and the limitations of the process, their purpose will have been achieved.

The paper formed an excellent basis for discussion, and several members took advantage of this to relate their experiences in connection with one or other of the items dealt with in the paper and to raise further questions.

In replying to the discussion, Capt. Richardson said that with regard to repairs to steam boilers he quite agreed with limiting the sphere of application, as was done by regulations. In this class of work success or failure depended very largely on the ability of the operator not only to handle the equipment correctly, but also to arrange the work so that contraction stresses are perfectly taken care of. His experience was that the majority of the welders doing this class of work were not capable of repairing simple cracks, let alone putting in patches or similar work which was often undertaken. He agreed with Mr. Hoddle that charcoal was an excellent material to use for preheating, mainly because it gave the heat more regularly to the casting, but he had found that with suitable gas burners and improvised furnaces excellent results could be obtained. With regard to the question of the use of jigs, he would give one example. A certain aeroplane detail of about 18 gauge was being welded on a jig with the underside of the weld in contact with the metal of the jig, and with size of blowpipe used it was impossible to avoid adhesion in the lower part of the weld, so that the operators, after removing the detail from the jig, wash welded the under side of the weld, thus doubling the cost and producing a defective weld in addition. In reply to Mr. Freeman, the methods of taking care of expansion and contraction, in addition to preheating the whole work, were by partial preheating of a section, by cutting bonding members, by limiting the expansion, by bending, separating the edges and dishing. No hard and fast rules can be given as to which method is applicable, but if the operator understands what expansion is, its cause and effect, it will be easily possible for him to deal with any other problem. The member who found in trying to repair cracks in aluminium castings that they extended, was not familiar with the simple elements of crack repairs, which necessitated drilling holes just beyond the cracks. Many welders worked from the edge of a casting and finished a repair in the body, with the consequence that failures took place. It was necessary to work in the opposite direction, namely, towards the open end. He agreed with Lieut. Dallow that the grading of welders could practically be on the lines of the grading of air mechanics, and he also agreed with him in that, as far as training welders go, a man starting with no knowledge was easier to train than one who had been training for some time without a knowledge of the technique of the process.

On the motion of Mr. C. Bingham, seconded by Mr. A. Jackson, and supported by Mr. C. Hoddle, a hearty vote of thanks was passed to Capt. Richardson.

New York—Chicago Aerial Mail.

On September 10th an aerial mail plane made the trip from Chicago to New York, starting from the former city at 6.25 a.m. and landing at Hicksville, L.I., at 8.20 p.m. Allowing for one hour's difference in time, the trip was made in 12 hrs. 55 mins. The actual flying time, however, was 10 hrs. 5 mins., there being a delay of 1 hr. 57 mins. at Cleveland and another of 53 mins. at Lockhaven, Pa., in procuring oil and petrol.

Spain—U.S.A. Aerial Services.

It is reported from Madrid that Capt. Herraro, Chief of the Spanish Air Service, has had several interviews with King Alfonso on the subject of aerial services between Spain and America. The scheme is also said to have been discussed at Cabinet meetings, and a shipping company are willing to finance it. The plan, it is understood, is to use large machines capable of carrying 40 passengers besides mails, and the fare suggested is £80 and a rate of 1s. per ounce for letters.

BOOK REVIEWS.

"THE FLYING POILU."

FROM the title-page to this book we learn that Marcel Nadaud is an "observer-bombarder" in the French Aviation Service. We should not have guessed that from reading his "charming tale of a Paris street urchin who wins his way to the Aviation Corps." His knowledge on the subject of aeroplanes and their ways, if not extensive, is, at any rate, peculiar. For instance, in what purports to be a description of a patrol flight, we read :

"A sudden turn of the motor, several misses, fugitive recoveries, the propeller stopped turning. Then turned very fast, then blocked !

"We've pancaked ! "

That, however, is not the end of the incident. We learn that after the pilot had worked the levers quickly without result, "the machine, deprived of speed, made a quick dive for about a hundred yards."

So much appears to have happened during that dive that it is evident the author was misled either by the distance or the speed. He goes on.

"I touched ground at the speed of more than sixty miles an hour, back pedalled. The machine obeyed, rebounded on its back wheels."

Even that is not the end, for the machine appears to have changed its mind ; it went on across a ravine, a road, a canal, a hedge, and finally turned turtle in a field.

It may be that some of the vagaries of this "realistic romance" should be placed to the account of the translator—it certainly reads as though the dictionary had been freely consulted, with anything but happy results. It would also seem that, conscious of being unable to render French slang into English, the translator has sprinkled in a few English and American slang terms as a sort of make-weight. Here and there the story has the true French blend of humour, pathos and gaiety, but it is spoilt by its absurd references to aeroplanes. It is reminiscent of a certain class of cinema drama in which accuracy of detail is prodigally sacrificed whenever it happens to be inconvenient. There are ten illustrations, but the artist's acquaintance with aviation seems to be as slight as that of the other collaborators. Messrs. Hodder and Stoughton are the publishers, and the price is *7s. 6d.* net.

"AEROPLANES AND AERO ENGINES."

THIS little book should prove useful to those who are turning to aviation as a profession, providing, as it does, an introduction in simple language to the subject of flight. It will also be helpful to those who either out of curiosity or because their business has to do with aeroplanes or engines, wish to know how and why an aeroplane flies, but who do not want to go to the length of studying the matter deeply. There have been many attempts to meet the demand for such an elementary handbook, but several of them have erred on the side of being too technical, while the majority have failed to give the necessary information. "Avion" in his book, which has just been published by Messrs. C. Arthur Pearson, Ltd., appears to have struck the happy medium. In the first half of the book he explains why an aeroplane flies, how its stability is secured and how it is controlled. He also touches lightly on the subject of rigging, outlines the theory of the propeller and indicates the purpose of the various instruments found on an aeroplane. In the second part the characteristics of the various types of engines used on aeroplanes are discussed, and there is a brief chapter on the management of an aero engine. The book is illustrated by a number of sketches and diagrams which are admirably clear. The book is published at *2s. 6d.*, and copies can be obtained from "FLIGHT" Offices for *2s. 10d.* post free.

"WOMEN AND SOLDIERS."

ONE result of the recent 'bus strike has been to provoke a good deal of hard thinking as to what women have really done to help on the war and—not less important—the motives which have inspired their action. Undoubtedly many have set a brilliant example of patriotism and self-sacrifice, but it is equally true that too many have been content to stand aloof and merely applaud or criticise. In "Women and Soldiers" Mrs. Alec-Tweedie, besides showing something of what women have done in the war, has written a book which is distinctly useful especially to those who are giving their serious attention to the problems of re-construction. In the course of her busy life she has studied men and women at work and play in many parts of the world and since the war started has been actively co-operating in the work of Y.M.C.A. centres and such like. As those who are acquainted with her writings are aware, Mrs. Alec-Tweedie is gifted with an eye for the things which really matter, and can write of them in a way to not only interest her readers but to make them think. All the time she is learning—and teaching others.

She hits hard and directly at many of the anomalies of the British system. Thus on the subject of thrift she says : "*Don't save* seems to be the cry of Great Britain. Why should a workman save ? If he does he becomes one of the hated capitalists. If he doesn't, the State pays for him—at birth, feeds him, washes him, educates him, hospitals him, pensions him, and buries him. Take a self-respecting little person who saves for his old age. The moment he has saved £130 a year to live on, down come the tax collectors and punish him for his thrift."

It is only to be expected that a woman with such far-sighted views as Mrs. Alec-Tweedie should have quickly realised that the war will be decided in the air, although it is not generally known that in January, 1916, she offered a prize of £1,000 to the War Office for an aeroplane engine that would quickly help to finish the war. Although we may not all be able to see eye to eye with her in her hope that after the war women will be able to find jobs as aerial postwomen, there is much in "Women and Soldiers" which makes it well worth the *2s. 6d.* which it costs. It is published by Mr. John Lane.

"CARBURATION."

NEARLY eight years ago Mr. F. W. Lanchester said that in his experience the design of the spray type of carburettor was somewhat in the same position as the design and fitting out of a sailing boat. "Different men come along and move the ballast to different positions and alter and shift the sail plan about, here and there, and get different results, better or worse ; but none of them get the exact results the designer anticipated, or know with any sort of certainty what effect any given alteration will produce." In his voluminous report to the American Advisory Committee for Aeronautics, recently published, on the carburettor position at the present time, Prof. Lucke says that these views are just as true to-day, with this difference only, that in the intervening years a greater number of men have "come along and moved the ballast and altered the sail plan" so that the results on the whole are perhaps somewhat more improved. More attention is being given to the subject now on account of the problems involved in the running of aeroplane engines at high altitudes. The literature on the subject is scanty, but one useful book is Mr. R. W. A. Brewer's "Carburation in Theory and Practice," of which a new edition has just been published by Messrs. Crosby Lockwood and Son. Mr. Brewer is busily engaged on war work on the other side of the Atlantic, and so has not been able to give that full and complete care to the work of revision that the subject demands, and to add to his difficulties a package of his manuscript was involved in an incident in which a U-boat was concerned, and it has proved impossible to replace all the additions which were at first contemplated. However, some new and original matter has been added, and several descriptions of carburettors have been brought up to date. As showing the scope of the book, it may be mentioned that among the subjects treated in the various chapters are "Vaporisation and Evaporation," "Limits of Combustion," "Inlet Pipes and Inertia," "The Flow of Fuel through Small Orifices," "The Annulus," "Special Jets," "Float Chambers," "Exhaust Gas Analyses." The closing chapters consist of descriptions of a good many of the best-known carburettors, with some criticisms on their design and working. The price of the book is *12s. 6d.* net.

"METRIC AND BRITISH EQUIVALENTS."

PUBLISHED with the primary object of facilitating trade between Great Britain and Italy, the book of Metric Weights and Measures and British Equivalents, compiled by Mr. A. J. Lawson for the British-Italian Commercial Association, will be found useful by all engineers and manufacturers doing business with Italy, France, Spain, South America, etc. Conversion tables of almost every British unit of measurement into metric equivalents are given in detail, while there are also tables for converting *£ s. d.* into lire and *vice-versa*. The text is printed in both English and Italian.

Apart from the actual conversion tables, the question of the adoption of the decimal system in this country is considered in detail, and tables of *£ s. d.* expressed in decimals of a florin are included. The book is published by Messrs. Eyre and Spottiswcode, Ltd., and, bound in cloth, costs *5s.* net.

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PUBLICATIONS RECEIVED.

Fuel Economy in Cooking Apparatus. By A. H. Barker, B.A., B.Sc., &c. London : *The Builder*, Ltd., 4, Catherine Street, W.C. 2.

The Bombing of Bruges. By Capt. Paul Bewsher, D.S.C., R.A.F. London : Hodder and Stoughton. Price *5s.* net.

Personals

Casualties.

Lieut. RISDON M. BENNETT, R.A.F., who was killed in action September 28th, aged 18, was the elder son of Dr. and Mrs. Bennett, The Corner House, Beckenham.

Sec. Lieut. SCHOMBERG EDWARD MATTHEY, R.A.F., who was killed in action on October 3rd, aged 18, was the younger son of Col. and Mrs. Cyril G. R. Matthey, "Newlands," Kingsdown Beach, Walmer.

Second Lieutenant RALPH FREDERICK TALBOT, R.A.F., who was killed in action on September 2nd, aged 20, was the second son of Arthur Warburton Talbot, of Montreal, and formerly of Deal.

Major LESLIE PEECH AIZLEWOOD, M.C., R.A.F., who was accidentally killed while flying over the sea on September 29th, was the only son of Mr. and Mrs. A. Percy Aizlewood, of Blenheim, Rotherham. Born in 1895, he was educated at Uppingham School, and afterwards studied mechanical and electrical engineering at Sheffield University and Parkgate Iron and Steel Works. He received a commission in the York and Lancaster Regt., and on the day he was 17 entered on active military service at the outbreak of war and served in France from April to July, 1915. After being invalided home he joined the R.A.F., and flew to France in July, 1916. In the following September he singly engaged five enemy aeroplanes, crashed into one, brought it down in the sight of both armies, and although his own machine was damaged by the impact he brought it into our lines. For this he was awarded the Military Cross. After being made flight commander he was wounded, and on returning home did valuable work in establishing and conducting aerodromes in Scotland and England and in training men for the R.A.F., being mentioned in the *Gazette* for valuable services rendered.

Lieut. E. T. HALFORD, R.E., who died on October 10th at Wellesley House, Wellesley Lines, Aldershot, was the son of Edward Halford, M.D., and Letitia Halford.

Capt. HAROLD HAYNES, D.S.O., 6th Yorks Regt., attd. R.A.F., who was accidentally killed on September 26th, aged 23, was educated at St. Peter's School, York. He joined the Army in 1914 and was torpedoed on his way out to the Dardanelles in June, 1915. From 1915 to October, 1916, he was attached to the 10th Yorks. Regt., during which time he was doing intelligence work for the Secret Service, and was wounded in France in 1916. In October of the same year he was transferred to the R.A.F., and succeeded in bringing down one of the Gothas which were over London in the raid of last May. Capt. Haynes was the son of Mr. E. Haynes, and grandson of Mrs. Cadman, of Wath-on-Dearne, Yorks.

Second Lieutenant ROBERT STANNARD HERBERT, R.A.F., who was killed while flying, aged 19, was the only son of Mr. and Mrs. Leonard Herbert, 18, Argyll Mansions, Addison Bridge, W. 14.

Capt. CHARLES ROBERT REEVES HICKEY, D.F.C., R.A.F., who was killed in collision on October 3rd, aged 21, was the eldest son of Major Robert Hume Fayrer Hickey, of Parksville, Vancouver Island.

Lieut. HUMPHRY WILLIAM HERBERT LUCAS, M.C., R.A.F., who was accidentally killed while flying on October 2nd, aged 25, was the second son of the late Capt. B. W. Lucas, of the old 59th Regt., and Mrs. Lucas, of The Grove, Coulsden. He was educated at Christ's Hospital, and on leaving enlisted in the Westminster Dragoons (Territorial), and on mobilisation in August, 1914, went to Egypt with his regiment, afterwards going through the Gallipoli campaign. On his return to Egypt he was given a commission in a battalion of the Middlesex Regt., which he joined at Salonica, where he won the Military Cross, and was also mentioned in despatches. He transferred to the Air Force, October, 1917, and after qualifying as a pilot in Egypt, returned to England and was employed in the Air Defence Force until his fatal accident occurred. His two brothers are at the Front. The elder was dangerously wounded last year, and returned to the Front the day before his brother was killed.

Lieut. HENRY TRENEMAN PARTRIDGE, Royal Sussex Regt. and R.A.F., who was killed abroad on July 14th as the result of an aeroplane accident, aged 21, was the eldest son of Mr. and Mrs. H. S. Partridge, of 83, Pendle Road, Streatham.

Flight-Cadet HECTOR CAMPBELL WRIGHT, R.A.F., who died on September 29th as the result of an aeroplane accident, aged 18, was the only son of Alice Fordyce-Wright and the late Arthur Fordyce-Wright, of 59, Morningside Avenue, New York City, and grandson of the late Rev. W. P. A. Campbell, Rector of Fladbury, Worcestershire.

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From Germany to Holland.

THE following officers, who were prisoners in Germany, have arrived in Holland for internment :—

Geen, Lieut. C., London R., attd. R.A.F.
Griffin, Lieut. R. T., R.A.F.
Griffiths, Lieut. C. D., R. Welsh F., attd. R.A.F.
Halford, Lieut. E. A., Wilts R., attd. R.F.C
Heywood, Sec. Lieut. L. R., R.E., attd. R.F.C.

Married.

Lieut. GEOFFREY MURLAND ATKINSON, R.A.F., was married to Miss MARY AGNES FRANCIS DAINTREE, 46, Elgin Crescent, W.11, at St. Augustine's, Stepney (Aldgate), on October 16th.

Captain A. G. N. BELFIELD, R.A.F., formerly of the Devonshire Regt., only son of Mr. Arthur Belfield, 5, Kensington Square Mansions, was married on October 9th at the Chapel Royal, Savoy, to CLARICE, only daughter of Mr. and Mrs. HENEY, 30, Devonfield Road, S.W.

Capt. HERBERT JOHN BULLOCK, the Norfolk Regt. and R.A.F., son of the late Herbert Bullock, of Winslow, Bucks., was married on October 8th, at the Church of the Holy Trinity, Paddington, to PEARL, widow of Col. P. M. HEATH, I.A., and daughter of the late General St. John Richardson, I.A.

A. JOHN PARNELL, Aviation Section, U.S. Army, was married on October 3rd, at St. Augustine's, Tunbridge Wells, to MARJORIE ISABEL, youngest daughter of the late Dr. John E. RANKING, F.R.C.P., and Mrs. RANKING, Molyneux Lee, Tunbridge Wells.

To be Married.

The engagement is announced between Lieutenant SYDNEY R. GARNAR, R.A.F., son of Sydney T. Garnar, of Meadow View, Beckenham, and ROWENA, youngest daughter of Robert H. HOLDEN, Villestre, Rushall, and granddaughter of Sir Edward Holden, Glenelly, Walsall, and of the late Sir Benjamin Stone, The Grange, Erdington.

An engagement is announced between Lieut. R. N. HAMILTON, Yeomanry and R.A.F., eldest son of the late J. G. Hamilton, M.V.O., of Northdene, Johannesburg, and Mrs. Hamilton, High Beech, Oatlands Park, and OLIVE MARY third daughter of Mr. and Mrs. H. J. TURNER, Braziers End, Tring.

A marriage has been arranged between Lieut.-Col. A. JAMES, M.C., Hussars and R.A.F., son of Mr. and Mrs. Henry A. James, of Hurstmonceux Place, Sussex, and BRIDGET GUTHRIE, daughter of the late Mr. Murray Guthrie, M.P., and Mrs. Guthrie Stirling, of Torosay Castle, Isle of Mull.

The engagement is announced between Lieut. R. P. SPENCER, R.N.V. (Aviation Dept., Messrs. Vickers, Ltd.), eldest son of R. E. E. Spencer, Esq., of Walbottle Hall, Newburn, Northumberland, and KATHLEEN (Driver, R.A.F.), second daughter of Mr. and Mrs. B. P. WIGAN, of Penair, Whitchurch, Glamorgan.

The engagement is announced between Capt. C. H. M. WILLSON, The King's (Liverpool Regt.) and R.A.F., youngest son of Mr. and Mrs. A. J. A. Willson, Waterloo, Lancashire, and JESSIE EUNICE, only daughter of Mr. and Mrs. G. B. EVERITT, New Brighton, Cheshire.

Item.

Miss WARNER, of Thorpe Arch, Boston Spa, Yorks., would be glad if those writing to prisoners of war or hospitals in Germany would make enquiries for Lieut. JOHN WESTON WARNER, R.A.F., who is reported missing on the Western Front.

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Odling, Lieut. V. G., 3rd R. Berks R., attd. R.A.F.
Pearson, Lieut. L. J., R.E., attd. R.F.C.
Tooke, Capt. B. C., R.A.F.
Wingfield, Lieut. E. H., R.A.F.

Back from Germany.

THE following officer who was a prisoner in Germany has now arrived in England :—

Cook, Sec. Lt. L. C. L., A.S.C., attd. R.A.F.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, October 8th.

The following temporary appointments are made at the Air Ministry :—

Director.—Lieut.-Col. (Temp. Brig.-Gen.) B. C. Fellows, and to retain his temp. rank while so employed, vice Brig.-Gen. W. W. Warner, C.M.G. ; Oct. 1st.

Staff Officer, 1st Class.—Maj. (Temp. Lieut.-Col.) S. S. Kennedy, and to retain his temp. rank while so employed ; Sept. 26th.

Staff Officer, 2nd Class.—Capt. H. F. Atkinson-Clark, and to be Temp. Maj. while so employed ; Sept. 30th.

Staff Officer, 3rd Class.—And to be Temp. Capts. while so employed, if not already holding that rank :—W. G. M. Sarel (Maj., attd. Rif. Brig.) is granted a temp. commn. as Capt. (Hon. Maj.) ; Sept. 2nd. Lieut. A. Keiller, vice Maj. E. Childers, D.S.C. ; Sept. 23rd. Capt. A. H. Stuart, vice Capt. E. V. King-Hall ; Sept. 30th.

Staff Officer, 4th Class.—Sec. Lieut. T. Mitchell, and to be Temp. Lieut. while so employed ; Sept. 7th.

Provost Marshal.—Graded for purposes of pay as S.O.2.—Maj. G. D. Pryor ; Oct. 1st.

The following temporary appointments are made :—

Group Commander.—Lieut.-Col. R. H. Mulock, D.S.O., and to be Temp. Col. while so employed ; Aug. 29th.

Staff Officers, 2nd Class.—And to be Temp. Majs. while so employed, if not already holding that rank :—Lieut. (Temp. Capt.) T. L. F. Burnett, vice Capt. (Temp. Maj.) F. J. Baker, who relinquishes the temp. rank of Maj. ; Sept. 18th. Capt. W. S. Evans ; Sept. 19th. (Q.) Capt. H. G. Wheeler ; Aug. 21st.

Staff Officers, 3rd Class.—Capt. E. P. M. Robinson ; July 26th. Maj. E. Childers, D.S.C. ; Sept. 7th. Lieut. (Temp. Capt.) G. A. Williams, and to retain his temp. rank whilst so employed, vice Capt. W. S. Evans ; Sept. 19th. Capt. S. Henderson, vice Capt. W. Benn, D.S.O. ; Sept. 21st. (Q.) J. Williams (Qrmr. and Capt., D. of Corn. L.I.) is granted a temp. commn. as Capt. ; Aug. 4th.

Flying Branch.

Capt. J. H. Simpson to be Temp. Maj. whilst employed as Maj. (A.) ; Sept. 20th. Lieuts to be Temp. Capts. whilst employed as Capts. (A.) :—T. L. Tibbs ; Aug. 1st. J. A. Adam ; Sept. 1st. J. M. Drysdale ; Sept. 13th. J. E. Greene, D.F.C. ; Sept. 17th. R. I. Dines ; Sept. 21st. F. R. Hockney, R. C. Stokes, H. J. Welch ; Sept. 25th. A. Newman, M.C. ; Sept. 26th. W. H. Longton, A.F.C., K. M. A. Ramsay ; Sept. 27th. Capts. to be Capts. (A.) :—C. E. Moore ; Sept. 17th. D. M. B. Galbraith, D.S.C. ; Sept. 25th. Lieuts. to be Temp. Capts. whilst employed as Capts. (A. and S.) :—A. B. Massey ; Sept. 1st. F. I. Jacks ; Sept. 17th. Capt. R. F. L. Dickey, D.S.C., to be Capt. (A. and S.) ; May 9th. Lieut. J. W. Young (O.) to be Temp. Capt. whilst specially employed ; Sept. 5th. Lieuts. (Ad.) to be Lieuts. (A.) :—A. Glynne ; Aug. 1st. F. R. Pender ; Aug. 28th. Lieuts. (Obs. Officers) to be Lieuts. (Dir.) :—A. D. Light ; Aug. 21st. E. W. Grant ; Aug. 28th. Lieut. H. A. O'Connor to be Lieut. (Dir.) from (K.B.) ; Aug. 28th. Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank of Sec. Lieuts. (A.) :—J. S. Hunt ; June 25th. N. E. Ohman ; July 9th. J. R. I. Farquharson ; July 15th. N. C. McVeigh, W. M. M. McNeill-Hamilton ; July 26th. F. W. Barker ; Aug. 4th. J. H. Gardner ; Aug. 12th. R. S. Herbert ; Aug. 30th. R. Mayson ; Sept. 5th. A. B. Porter ; Sept. 13th. Prob. Flight Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lieuts. (A.) :—E. H. Berry ; July 3rd. J. C. Bradford ; July 31st. A. C. Watkins (Sec. Lieut., Linc. R., S.R.) is granted a temp. commn. as Sec. Lieut. (A.) ; July 31st. Following Flight Cadets are granted temp. commns. as Sec. Lieuts. (A.) :—E. J. Ashby, H. Runciman, J. R. Cox, J. C. Paler ; Sept. 23rd. W. K. Salton, J. W. Paine, J. C. R. Weeks, L. R. Harvey, J. L. Rolston ; Sept. 24th. R. Reynolds ; Sept. 25th. Following Cadets are granted temp. commns. as Sec. Lieuts. (A.) :—D. Agassiz, G. W. Bailey, P. H. Bernard, E. H. Biddle, W. E. Brown, W. Z. Cade, K. R. Carson, J. R. E. Coburn, F. E. Convery, E. C. Cross, L. Darche, A. B. De Wolfe, D. J. Dyer, H. B. Gilmour, M. Golt, T. C. Greeley, A. E. I. Harter, W. M. Hodgson, W. C. Henry, H. A. Hoth, L. McK. Johnston, D. C. Jones, J. Kerr, N. H. Kilpatrick, G. S. C. Lang, R. J. Lester, L. W. Lloyd, J. W. MacEwen, G. E. Macklem, J. C. Mahaney, G. H. Manly, C. A. Maxwell, A. H. Maynard, W. Mein, E. E. Morrison, L. A. Myles, A. H. McDonald, C. R. McLeod, J. H. McLeod, M. C. McLeod, C. H. H. Ney, H. F. Noel, C. G. Nuttall, A. A. Oldham, F. T Pearce, S. C. Ridges, W. Saunders, V. R. Schieck, E. M. Sheppard, J. H. Shields, W. J Spicer, G. F. Sponenburg, C. H. Stockwell, A. B. Taylor, G. W. Taylor, J. B. Tiffin, J. Tough, A. F. Waltzinger, J. T. Whitney, J. S. Williamson, L. A. Wilson, S. K. Young, E. S. Pollock, J. H. Hartle, T. Lund ; Aug. 22nd. W. T. Allen, I. R. Bailey, W. K. Badenach, E. Balestier, C. G. Beatty, C. H. Booth, E. G. Breen, J. W. Caines, S. A. Corley, J. Clayton, K. F. Cleall, R. Davison, M. R. Dynes, A. G. Everett, P. J. Gernsbacher, P. D. B. Gillespie, V. Graham, W. J. H. Hawkins, A. S. Hunt, J. B. Jackson, H. J. V. Jacobs, O. A. Johnson, R. C. Love, R. M. Macdonald, D. H. Mackay, A. L. Maclean, E. McGeer, A. E. Naylor, L. J. Oldfin, D. L. Plumton, W. A. Prendergast, W. Roberts, G. N. Russell, M. G. Sample, C. A. Smith, W. F. Spencer, W. P. O'B. Sweeney, M. J. H. Weir, W. J. Wigmore ; Aug. 29th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (A. and S.) :—F. W. de Beer, P. Davis ; Aug. 10th. R. H. Trollip ; Aug. 17th. H. R. Humphreys ; Aug. 24th. A. S. Cameron, E. G. Hill ; Aug. 31st. J. R. Kellett, N. M. Corcos ; Sept. 24th. T. Swinburne ; Sept. 25th.

The appointments of the following as Sec. Lieuts. (A. and S.) are antedated as stated against their names :—R. C. Davies ; April 1st. S. A. Forberger ; April 2nd. H. R. Abey ; April 4th. J. A. Mitchell ; April 6th. A. S. Maltby ; April 9th. C. E. Thomas ; April 11th. F. C. Pacey ; April 12th. F. M. Clark ; April 28th. G. A. A. LeMoine ; May 1st. C. A. Koch ; May 10th. E. A. Spence ; May 12th. J. E. Jennings ; May 21st. J. B. O'Neil ; May 24th. R. W. Murray ; May 30th. J. M. MacDonald ; June 2nd. R. C. Pattullo ; June 8th. W. R. Penny ; June 12th. W. Gilbert ; June 13th. H. E. Dobson ; June 15th. W. G. Pearce ; June 16th. H. G. Fraser, B. S. Philp ; June 17th. M. Marks ; June 19th. L. H. McHarg, C. McLean ; June 23rd. C. W. Duncan, O. S. Clefstad ; June 26th. A. W. Johnston ; June 30th. H. J. Philp ; July 12th. N. C. McVeigh, J. W. Wilson, E. S. W. Smith, P. R. Davis, M. J. Moffatt ; July 13th. L. A. Brais ; July 14th. R. J. Clench, July 16th. J. C. Malcolmson ; July 17th. R. W. Kerr ; July 18th.

The following are granted temp. commns. as Sec. Lieuts. (Dir.) :—G. Kaines-Thomas (Sec. Lieut., R.G.A., S.R.) ; E. L. Trower (Temp. Lieut., R.E.), and to be Hon. Lieut. ; J. Hutton (Lieut., R.F.A., S.R.), and to be Hon. Lieut. ; Aug. 21st.

Sec. Lieut. T. B. Howard (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (Obs. Officer) ; Oct. 5th.

Cadets granted temp. commissions as Sec. Lieuts. (Obs. Officers) :—R. S. Asher, A. G. Bailey, C. Bartow, L. C. Battle, J. W. Clarke, M. J. Clement, A. W. Crozier W. A. Dickson, I. E. Erb, N. Ferrell, G. MacK. Finlayson, D. A. Fraser, E. J. Hardy, E. F. Harrington, S. E. Minrath, J. Morren, R. W. Moss, M. P. Caffrey, E. P. McCarville, P. B. McCowan, C. S. D. McLeod, D. F. McTavish, W. T. Smith, N. G. Strong, R. O. Trentowsky, E. D. Valiant, F. C. Wadsworth, G. Williams, J. H. A. Wilmot ; Aug. 29th.

The following are granted temp. commns. as Sec. Lieuts. (Obs. Officers) :—C. L. Douthwaite (Sec. Lieut., E. York R., T.F.), A. L. Willcox (Lieut., Dorset R.), and to be Hon. Lieut. ; R. H. Milner (Sec. Lieut., E. York R., S.R.) ; R. A. S. Howes (Lieut., S. Lan. R.), and to be Hon. Lieut. ; J. V. McKenzie (Lieut., W. Ontario R., C.E.F.), and to be Hon. Lieut. ; M. B. C. Lake (Temp. Sec. Lieut., R. W. Surr. R.) ; Oct. 5th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (Ob. Offrs.) :—L. Wadsworth ; May 25th (since deceased.) C. W. Newstead, F. H. V. Coomer, G. H. Dixon, N. Fielden, W. Rushton, G. B. Allen, F. W. Brown, W. M. Newton ; Sept. 30th. J. M. Caldwell, D. Manners, R. D. W. Nicholls, P. E. Sawle, R. Mugford, C. B. Parker, F. Priestman, G. R. Hodson ; Oct. 4th.

The following relinquish their commissions on ceasing to be employed :—Lieut. C. N. Milligan (Lieut., Brit. Col. R.) ; Sept. 12th. Lieut. R. Gore (Lieut. Hussars) ; Sept. 22nd. Capt. M. McN. McBride (High. L.I.) relinquishes his commn. on account of ill-health contracted on active service ; Oct. 9th. Following Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lieut. :—A. Edwards, W. R. F. Gillham ; Oct. 9th. Lieut. W. Harie (Lieut., North'd Fus., T.F.) resigns his commn. ; Oct. 9th. Lieut. G. Hook relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lieut. ; Oct. 9th. Lieut. W. L. P. Gould relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Observer ; Sept. 28th (substituted for notification in the *Gazette*, Sept. 27th). Sec. Lieuts. relinquish their commns. having been found permanently unfit for further instruction as Pilots or Observers (substituted for notification in the *Gazette* Sept. 27th) :—J. G. Anderson, A. H. Bristow, J. R. S. Cox, J. L. Eastwood, A. L. E. Edwards, J. Gannon, W. B. Jones, L. Marriott, S. H. Roberson, J. J. Ward ; Sept. 28th. Lieuts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers :—H. J. FitzGibbon, E. A. Humphries ; Oct. 9th. Sec. Lieuts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers :—L. C. G. M. le Champion, E. G. Fry, J. A. Gibson, G. H. Haslam, A. J. B. Thompson. The date of appointment of Lieut. J. W. Schofield as Temp. Capt. (A.) is Oct, 1st, and not as stated in the *Gazette* of Sept. 24th. Surname of Lieut. (Temp. Capt.) C. M. Brisco-Owen, M.C., is as now described, and not as stated in the *Gazette* of Aug. 27th ; surname of T. F. Macguire is as now described, and not as in *Gazette* of Sept. 24th, page 11,348 ; name of Flight Cadet Charles Henry Alcroft Farman is as now described, not Charles Farnon as in the *Gazette* of Sept. 17th ; initials and surname of Lieut. (Temp. Capt.) P. B. O. L. B. dit Morency are as now described, and not P. Movency, as stated on page 10,007 of the *Gazette*, Aug. 27th ; notification in the *Gazette* of Aug. 20th concerning Flight Cadet O. W. Clarke is cancelled ; notification in the *Gazette* of Sept. 3rd concerning Flight Cadet T. G. Brooke is cancelled.

Administrative Branch.

Capt. C. J. Orde to be Temp. Maj. whilst employed as Maj. from (A.) ; Aug. 16th. Capt. (Temp. Maj.) E. H. Cockburn retains his temp. rank whilst employed as Maj., from (S.O.) ; Sept. 9th. Lieuts to be Temp. Capts. whilst employed as Capts. :—J. H. Catleugh ; April 1st. H. A. T. Trier ; Sept. 23rd. Sec. Lieut. (Hon. Capt.) E. Codyre to be Temp. Capt. whilst employed as Capt. ; Aug. 13th. Capt. E. O'D. Crean retains his rank (without the pay and allowances) on reclassification from (Dir.) ; Aug. 9th. A. S. Weeding (Temp. Capt., Sp. List, is granted a temp commn. as Capt. ; July 1st. Lieuts. (A.) to be Lieuts. :—R. G. Taylor ; Aug. 9th. G. E. F. Elliott ; Aug. 24th. A. Ashurst ; Sept. 2nd. C. C. Statt ; Sept. 28th. Lieuts. (O.) to be Lieuts. F. W. A. Vickery ; Aug. 24th. C. E. Prescott ; Sept. 23rd. B. Farmer, N. H. de V. Heathcote ; Sept. 28th. The following are granted temp. commns. as Lieuts. :—H. T. Jones (Temporary Lieut., A.P.D.) ; J. S. Lumsden (Lieut. Scots Gds.) ; April 1st. J. P. P. L. Biggs (Temp. Lieut., A.P.D. ; July 1st. F. Whittaker (Qrmr. and Hon. Lieut., Spec. List) ; Sept. 21st. C. H. Bidmead (Lieut., Lab. Corps) ; Sept. 23rd. T. C. Cook (Temp. Lieut., Lan. Fus.) ; Sept. 24th. J. L. Stewart-Moore (Lieut., New Armies) ; Sept. 25th. F. R. Haggie (Temp. Lieut., Life Gds.) ; Sept. 27th. Sec. Lieuts. (Hon. Lieut.) to be Temp. Lieuts. while employed as Lieuts. :—S. H. Alston ; Sept. 7th. F. Bagot, from (T.) ; *Sept. 27th. Sec. Lieut. A. Snell to be Lieut. ; Oct. 9th.* The following are granted temp. commns. as Sec. Lieuts. :—R. F. Hamlyn (Lieut., Lond. R., T.F.), and to be Hon. Lieut. ; July 27th. F. A. Mansfield (Temp. Sec. Lieut., R.W. Kent R.) ; Sept. 8th. J. P. Nolan ; Sept. 14th. A. S. Mansfield ; Oct. 5th. J. H. Fraser ; Oct. 7th. Sec. Lieut. E. Edwards to be Sec. Lieut., from (T.) ; Aug. 22nd. The following relinquish their commns. on ceasing to be employed :—Lieut. L. J. Dennis (Lieut., K. L'pool R.) ; Aug. 17th. Maj. C. W. Price (Maj., Lond. Yeo.) ; Sept. 17th. Sec. Lieut. J. B. Waddington relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut. ; Oct. 9th. Sec. Lieut. W. H. C. Burton resigns his commn. ; Oct. 9th. The notification in the *Gazette* of July 23rd concerning Lieut. W. A. Watson is cancelled.

Technical Branch.

Maj. (Temp. Lieut.-Col.) E. G. O. Beuttler to be Maj. (Temp. Lieut.-Col.), from (Ad.) ; May 23rd. Lieuts to be Temp. Capts., while employed as Capts. : E. J. Edwards ; Sept. 21st. H. S. Elliott ; Sept. 23rd. Capt. (Temp. Maj.) J. H. Dunn relinquishes his temp. rank at his own request ; Sept. 23rd. Lieuts. (A.) to be Lieuts. :—W. F. Mytton ; Aug. 31st. J. M. R. E. St. Amory ; Sept. 7th. J. Ditchfield ; Sept. 18th. Lieut. J. Southall to be Lieut., from (A. and S.) ; Aug. 23rd. Lieuts. (Obs. Officers) to be Lieuts. :—T. H. D. Silvers ; Aug. 24th. J. W. Pearson ; Aug. 28th. J. Fleming ; Aug. 29th. H. E. Hall ; Sept. 7th. L. Marsh ; Sept. 13th. C. Hole (Lieut., R.N.V.R.) is granted a temp. commn. as Lieut., and to be Hon. Capt. ; June 17th. Sec. Lieuts. (Ad.) to be Sec. Lieuts. :—E. S. Osborn ; April 15th. S. Aspinall ; Aug. 5th. A. B. Evans ; Sept. 10th. F. C. Starkey, W. Haddon, A. J. Christie, S. C. Bicknell ; Sept. 14th. Sec. Lieuts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lieuts. :—G. E. H. Smith ; April 15th. V. H. C. Gayford ; Aug. 12th.

The following are granted temp. commns. as Sec. Lieuts. :—C. W. Habrow (Temp. Lieut., attd. R.W. Kent R.), and to be Hon. Lieut. ; June 17th. R. Nicoll (Lieut., R.F.A., S.R.), and to be Hon. Lieut. ; Sept. 21st.

The following relinquish their commns. on ceasing to be employed :—Sec. Lieut. (Hon. Capt.) T. H. McClelland (Capt., S.A. Native Labour Troops) ; Sept. 9th. Sec. Lieut. (Temp. Lieut.) J. Millar-Whitfield (Lieut., R.E.) ; Sept. 24th. Sec. Lieut. W. R. Gemmill relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.

Oct. 9th. Sec. Lieut. (Hon. Lieut.) C. Russell (Lieut., R.E., T.F.) relinquishes his commn. on account of ill-health ; Oct. 9th.

Medical Branch.

The following Lieut.-Cols. to take seniority from April 1st :—R. H. Mornement, prec. next below H. H. Southey ; W. H. Pope, prec. next below R. H. Mornement ; N. J. Roche, prec. next below F. L. M. Boothby ; J. St. J. Murphy, prec. next below C. A. Ward ; H. Cooper, D.S.O., prec. next below C. F. Pollock. The following Majs. (Temp. Lieut.-Cols.) to take seniority from April 1st :—H. F. Horne, prec. next below G. H. Padley ; H. C. T. Langton, prec. next below C. S. MacNab. Capt. (Temp. Lieut.-Col.) R. P. Williams to take seniority from April 1st, with prec. next below E. P. Plenty.

The following Capts. (Temp. Majs.) to take seniority from April 1st :—C. H. S. Taylor, prec. next below F. C. Jenkins ; J. McIntyre, prec. next below P. E. L. Gethin. The following Capts. to take seniority from April 1st :—A. L. George, prec. next below R. H. Woods ; A. P. Woollright, prec. next below D. Thomson ; A. P. Bowdler, prec. next below E. W. Leggatt ; A. G. Graham, prec. next below W. B. Stuart ; H. L. H. Greer, prec. next below A. H. O'H. Wood ; C. S. Glegg, prec. next below W. A. McClatchie ; A. T. Williamson, prec. next below T. G. Baxenden. The following are granted temp. commns. as Lieuts. : A. Parker ; Oct. 5th. G. M. Wishart ; Oct. 7th.

Dental Branch.

L. Wigoder is granted a temp. commn. as Lieut. ; Oct. 7th.

Memoranda.

Lieut. E. N. L. White is granted the hon. rank of Maj. ; Oct. 8th. H. G. Wheeler (Temp. Capt., A.O.D.) is granted a temp. commn. as Capt. ; May 15th. The following relinquish their commns. on ceasing to be employed :—Lieut.-Col. Temp. Brig.-Gen.) W. W. Warner, C.M.G., and is granted the hon. rank of Brig-Gen. ; Oct. 1st. Capt. F. A. Barton ; Aug. 31st. Sec. Lieut. (on prob.) V. A. Powell ; Sept. 20th. Maj. W. H. Ewen relinquishes his commn. on account of ill-health and is granted the hon. rank of Maj. ; Oct. 9th. Capt. H. J. de C. Moore relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt. ; Oct. 9th. Lieut. (Temp. Capt.) J. P. Flynn resigns his commn. to resume his medical studies, and is granted the hon. rank of Lieut. ; Oct. 9th.

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The following temporary appointments are made at the Air Ministry :—

Director.—Lieut.-Col. K. G. Brooke, and to be Temp. Col. while so employed ; Oct. 1st.

Staff Officer, 2nd Class.—Capt. L. M. Wells-Bladden, and to be Temp. Maj. while so employed ; Aug. 5th.

Staff Officers, 3rd Class.—Sec. Lieut. (Temp. Capt.) F. Waldron, and to retain his temp. rank while so employed ; July 16th to Oct. 2nd. Lieut. (Temp. Capt. H. C. G. Allen, and to retain his temp. rank while so employed ; Sept. 30th. Lieut. J. E. Pike, and to be Temp. Capt. while so employed ; Oct. 2nd.

Staff Officer, 4th Class.—Sec. Lieut. O. H. C. Webb, and to be Temp. Lieut. while so employed, vice Lieut. (Temp. Capt.) J. E. Pike ; Oct. 2nd.

The following temporary appointments are made :—

Colonel (Equipment).—Lieut.-Col. A. Christie, D.S.O., and to be Temp. Col. while so employed ; Sept. 23rd.

Staff Officer, 3rd Class.—Lieut. (Temp. Capt.) W. W. Moser, and to retain his temp. rank while so employed ; Aug. 5th. Capt. F. T. Williams ; July 17th. Capt. H. A. Fordham ; Sept. 16th. Capt. E. B. A. Rayner ; Sept. 22nd. Capt. S. M. Wood ; Sept. 25th.

Staff Officer, 4th Class (1st Grade).—Capt. C. J. Temperley ; Aug. 21st.

Staff Officer. 4th Class (2nd Grade).—A. R. Ovens (Lieut., R.A.), and is granted a temp. commn. as Lieut. ; Aug. 21st. Sec. Lieut. (Hon. Capt.) A. H. Fynn, and to be Temp. Lieut. while so employed ; Aug. 21st.

Flying Branch.

Capt. H. F. Delarue to be Temp. Capt. (A. and S.) while employed as Capt. ; Oct. 1st.

Lieut. (Temp. Capt.) H. J. Brewster to retain his temp. rank while employed as Capt. (A. and S.) ; July 30th.

Lieut. (Temp. Capt.) J. A. Middleton, M.C., to retain his temp. rank while employed as Capt. (A.), from (S.O.) ; Sept. 18th.

Lieuts. to be Temp. Capts. while employed as Capts. (A.) :—G. H. Russell ; July 6th. G. M. Duncan ; Sept. 16th. S. H. Wallage ; Sept. 28th. C. G. Ross ; Sept. 29th. M. M. Freehill ; Sept. 30th. W. H. Buckeridge ; Oct. 6th. G. W. Wareing ; Oct. 7th.

Sec. Lieut. H. D. McLaren to be Temp. Capt. while employed as Capt. (A.) ; Sept. 26th.

Lieut. D. A. J. Prendergast to be Temp. Capt. while employed as Capt. (K.B.) ; June 10th.

Lieut. D. S. Allen to be Lieut. (A.), from (T.) ; Sept. 5th.

Lieut. W. R. Hibbins to be Lieut. (A.), from Observer Officer ; Sept. 22nd.

The notification in *Gazette* Sept. 27th concerning Lieut. G. M. Duncan is cancelled.

The notification in *Gazette* Aug. 13th concerning Lieut. (Temp. Capt.) C. H. Russell is cancelled.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (A. and S.) :—C. A. V. Weise, H. E. G. Phillips ; Aug. 13th. H. C. Durant, R. J. Eve, G. Brownrigg ; Aug. 31st. T. B. Davie, R. G. Davie, G. D. Ilsley, C. C. Kruger, F. Laughton, A. Mulroy, F. Marnie, G. Paton, J. H. Reed, R. L. Richards, H. Simon, E. H. C. Steeds, N. C. Tanner, G. M. Van Der Merwe, I. Kleinot, L. Marquard, R. R. Laver, D. N. Taylor, C. Vigne, J. G. Page ; Sept. 21st. W. H. Bruce, K. J. S. Boardman, C. B. De Villiers, A. W. Du Bourg, C. G. Goldsbury, J. W. Gravell, H. L. Knight, G. T. Miles, F. R. Schmidt, T. R. Sharpe, B. Smulian, P. C. Thurnau, E. H. Van der Riet, J. G. F. Van Rooyen, J. O. Waddington, D. C. H. Wayland, A. Wright, J. M. Frazer ; Sept. 28th. G. R. Newton-Bridle, W. T. Brownlee ; Sept. 29th.

The following are granted temp. commns. as Sec. Lieuts. (A. and S.) :—N. Q. Harvey ; Aug. 10th. D. G. Malherbe ; Sept. 7th. J. H. Matthews ; Sept. 18th. E. E. Jones ; Sept. 23rd.

The following officers are antedated in their appointments as Sec. Lieuts. (A. and S.), with effect from the dates stated :—G. M. P. O'Keefe ; May 1st. S. D. Connolly ; May 18th. G. K. Mills ; May 24th. W. St. C. Slater ; June 4th. H. C. Dean ; July 16th. J. M. Porteous ; July 24th.

The following Flight Cadets are granted temp. commns as Sec. Lieuts. (A.) : V. M. V. Field, S. I. Foster ; April 27th. J. Hart ; Aug. 29th. H. E. Froy ; Sept. 19th. E. Pidgeon, I. G. G. Edgar, E. D. Davidson, W. M. Munshaw, H. C. Grout, C. Wilkie, F. H. Turner ; Sept. 22nd. A. Whiteley, W. C. Woods F. B. Booth, E. A. Powrie ; Sept. 25th. H. L. Christie, H. H. R. Hanford, W. W. Coates, S. L. F. St. Barbe, J. D. Brine, W. R. Kelley, R. T. E. Wood, C. C. Worboys, C. A. Stuart, F. K. Damant, B. K. Duchesne, R. Ottaway-Wilson ; Sept. 26th. S. N. Webster, A. G. Wilson, A. Hitchcock, A. A. Pearce, M. Hinshelwood, T. D. Ross, E. A. Roberts, J. H. Chambers, J. G. Caygill, E. W. Steele, C. W. Smith, G. N. Taylor, A. Watson ; Sept. 27th. D. Keiller, E. J. McGee ; Sept. 28th. F. W. Perrin, A. C. Evans, J. Grisdale ; Sept. 29th. L. S. Gillett, F. Cox, B. Spaven, H. C. T. Browne, F. J. Reynolds, J. I. Morgan ; Sept. 30th.

The following Cadets are granted temp. commns. as Sec. Lieuts. (A.) :—C. J. Johnson ; Sept. 7th. G. W. H. De Carter ; Sept. 8th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (A.) :—S. W. W. Field, P. F. Bovingdon ; July 16th. A. M. Duggan ; Sept. 4th. P. W. Johnson, H. H. Smith (date of first commn., March 18th) ; Sept. 14th. S. H. H. Swanton, P. G. Child, R. C. Stiven ; Sept. 15th. C. L. Bowley, R. D. Connop, E. S. Banfield, H. A. Griffiths ; Sept. 16th. L. C. Cox, J. Aitken, H. R. Wright ; Sept. 17th. E. Ackroyd, D. G. Bailey, A. W. Birch ; Sept. 18th. W. N. Harrison, A. A. Courtney-Dunn, S. E. Burden, R. Sinclair, R. M. McGregor, J. F. Heydenrych ; Sept. 19th. M. H. Leech, P. Addison, W. Kinghorn, G. P. Alexander ; Sept. 22nd.

Sec. Lieut. J. Gibson (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (A.) ; Sept. 15th.

The following P.F.O.'s (late R.N.A.S.) are granted temp. commn. as Sec. Lieuts. (A.) :—H. C. Curtis ; July 29th. A. E. Beilby, J. De F. Bailey ; Sept. 7th. W. M. Cowper ; Sept. 13th. C. Shaw ; Sept. 14th. R. B. Gotch ; Sept. 15th. H. E. Foster ; Sept. 16th. N. H. C. Loft ; Sept. 17th. R. B. Stock ; Sept. 18th. A. G. E. Briggs ; Sept. 19th.

The following are granted temp. commns. as Sec. Lieuts. (A.) :—B. A. Whitmore (Lieut., Saskatchewan R., C.E.F.), and to be Hon. Lieut. ; May 8th. H. E. A. E. Bolton (Temp. Lieut, Res. R. of Cav.), and to be Hon. Lieut. ; L. S. Davis (Temp. Lieut., R. Fus.), and to be Hon. Lieut. ; July 16th. G. W. Heslam (Temp. Sec. Lieut., R. Muns. Fus.) ; Sept. 12th. A. Creswell (Lieut. Saskatchewan R., C.E.F.), and to be Hon. Lieut. ; Sept. 14th. H. L. W. Stevens (Temp. Lieut., R.W. Surr. R.), and to be Hon. Lieut. ; A. E. Boggiano (Sec. Lieut., L'pool R., T.F.) ; Sept. 15th. F. McGraw (Lieut., Brit. Columbia R., C.E.F.), and to be Hon. Lieut. ; H. H. Hunt (Sec. Lieut., Lond. R., T.F.) ; Sept. 16th. C. G. Bateson (Temp. Sec. Lieut., W. York. R.) ; Sept. 18th. M. Savill, M.C. (Capt., Lond. R., T.F.), and to be Hon. Capt. ; Sept. 19th. J. W. New (Lieut., Midd'x. R., T.F.), and to be Hon. Lieut. ; Sept. 19th. J. Cafferkey (Sec. Lieut., Conn. Rang., S.R.) ; Sept. 21st.

The Christian names of Edward Norman Fenton are as now described, and not as in the *Gazette* Sept. 17th.

The notification in *Gazette* Sept. 13th concerning Lieut. A. M. Campbell, R.F.A., S.R., is cancelled.

Prob. Flt. Officer J. B. Davies (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (S.) ; Sept. 19th.

The following Flt. Cadets are granted temp. commns. as Sec. Lieuts. (S.) :—R. G. Mathieson, W. T. Poole ; Sept. 26th.

The following are granted temp. commns. as Sec. Lieuts. (K.B.) :—W. F. List (Sec. Lieut., Lond. R., T.F.), W. E. Pilgrim (Sec. Lieut., Lond. R., T.F.), L. Spaven (Temp. Sec. Lieut., R.W. Surr. R.) ; Sept. 14th. W. F. Dollery (Sec. Lieut., R.G.A., S.R.) ; Sept. 17th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (K.B.) : G. Gould, L. P. James, J. Murphy, L. B. Sifton, R. G. Smith ; Sept. 25th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (K.B.) :—I. A. Bailey, C. W. Griffin ; Sept. 14th.

The notification in *Gazette*, Oct. 1st, concerning Sec. Lieut. T. A. Evans (late Gen. List, R.F.C., on prob.) is cancelled.

The notification in *Gazette* Aug. 20th concerning L. W. King is cancelled.

The notification in *Gazette* Aug. 2nd concerning Sec. Lieut. G. E. Hunt (York. L.I., T.F.) is cancelled.

The notification in *Gazette* Sept. 17th concerning Lieut. J. Jackson (Norf. R.) is cancelled.

The notification in *Gazette* Sept. 17th concerning Sec. Lieut. J. Hart (late Gen. List, R.F.C., on prob.) is cancelled.

Capt. S. Davenport to be Capt. (Dir.), from (T.) ; Sept. 18th.

Capt. J. H. P. Brain to be Capt. (Dir.), from (Ad.) ; Sept. 18th.

Lieut. J. B. Anderson, M.C., to be Lieut. (Dir.), from (K.B.) ; Sept. 18th.

The following Lieuts. (Ob. Officers) to be Lieuts. (Dir.) :—C. Dixon, H. V. Dorey ; Sept. 18th.

Lieut. C. W. Seymour-Hall (K.B.) to be Lieut. (Dir.) ; April 10th (substituted for notification in *Gazette* Sept. 10th).

Temp. Capt. H. P. Valentine (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (Dir.), and to be Hon. Capt. ; Sept. 18th.

The following Flight Cadets are granted temp, commns. as Sec. Lieuts. (Dir.) : W. Hughes, A. E. C. Largen, R. S. Corbett, F. M. Phillips, J. R. N. Booth ; Sept. 15th.

The following are granted temp. commns. as Sec. Lieuts. (Dir.) :—F. Cave-Brown-Cave (Lieut., W. Ont. R., C.E.F.), and to be Hon. Lieut. ; I. S. Bellis (Sec. Lieut., R.W. Fus., T.F.) ; J. B. Windle (Lieut., R.G.A., T.F.), and to be Hon. Lieut. ; G. S. Paterson (Temp. Capt., R.G.A.), and to be Hon. Capt. ; G. Cotton-Stapleton (Temp. Sec. Lieut., attd. Rif. Brig.) ; B. F. Wilmer (Lieut. Essex Yeo., T.F.), and to be Hon. Lieut. ; C. A. Chaplin (Temp. Lieut., R.F.A.) and to be Hon. Lieut. ; Sept. 18th.

Prob. Flight Officer F. E. King (late R.N.A.S.), is granted a temp. commn. as Sec. Lieut. (Dir.) ; May 4th.

Sec. Lieut. J. D. Shotter to be Sec. Lieut. (Dir.), from (T.) ; June 24th.

Lieut. A. D. Wright to be Lieut. (Obs. Officer), from (K.B.) ; Sept. 7th.

The following are granted temp. commns. as Sec. Lieuts. (Obs. Officers) :—P. H. West (Lieut., E. Surr. R., T.F.), and to be Hon. Lieut. ; April 22nd. H. H. McColl, M.C. (Temp. Capt., W. Rid. R.), and to be Hon. Capt. ; W. Black, M.C. (Temp. Lieut., Cam'n. Highrs.), and to be Hon. Lieut. ; C. Frey, M.M. (Lieut., Saskatchewan R., C.E.F.), and to be Hon. Lieut. ; R. E. Mathias (Temp. Lieut., Welsh R.), and to be Hon. Lieut. ; J. W. Partridge (Temp. Sec. Lieut., North'n. R.) ; C. H. Rice (Sec. Lieut., Oxf. and Bucks. L.I., S.R.) ; May 31st. A. G. L. Sidwell (Sec. Lieut., R. Dub. Fus.) ; June 1st. G. B. Marshall (Lieut., North'd. Fus., T.F.), and to be Hon. Lieut. ; June 12th. G. R. Herrett (Temp. Sec. Lieut., R. Suss. R.) ; Aug. 23rd. N. A. J. Ewen (Temp. Lieut., Leic. R.), and to be Hon. Lieut. ; Sept. 19th. F. Vaillant (Lieut., Canadian Forestry Corps, C.E.F.,) and to be Hon. Lieut. ; Sept. 20th (substituted for notification in *Gazette*, Sept. 24th). I. B. Boyce (Lieut., Lond. R., T.F.), and to be Hon. Lieut. ; Sept. 20th (substituted for notification in *Gazette* Sept. 24th. H. Jardine, M.C. (Lieut., C.F.A., C.E.F.), and to be Hon. Lieut. G. P. Blake (Temp. Lieut., E. Kent R.), and to be Hon. Lieut., E. D. Cameron, (Lieut., W. Ontario R.), and to be Hon. Lieut., J. L. Sutherland (Lieut., Cent. Ontario R., C.E.F.), and to be Hon. Lieut. ; Sept. 21st. M. C. Trench (Temp. Lieut., R.E.), and to be Hon. Lieut., R. W. L. Thomson (Sec. Lieut., High. L.I., T.F.), A. S. Robertson (Lieut., New Brunswick R.), and to be Hon. Lieut., L. E. G. Judge, M.C. (Sec. Lieut., N. Lancs. R., T.F.) ; Sept. 24th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.), are confirmed in their rank as Sec. Lieuts. (Obs. Officers) :—F. Austin, S. A. Brabner, H. Bosher, S. Harvey, W. Marginson, H. G. Pope, A. Reid, W. Turner, E. G. Turner, H. E. Ford ; May 31st. R. W. A. Brigden ; Sept. 24th.

The following Prob. Obs. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lieuts. (Obs. Offrs.) :—D. L. Brocklesby ; Aug. 4th. H. Hinchliffe ; Sept. 24th. D. B. Bright ; Sept. 26th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (Obs. Officers) :—H. B. Elbourne, T. Fletcher ; Aug. 23rd. J. A. Addison ; Aug. 30th. A. W. K. Brown, E. R. Cossar ; Sept. 19th. A. Bates ; Sept. 21st. E. Parrish, R. S. Donkin, H. D. Lewis, L. H. W. Goscoigne, J. E. Richards ; Sept. 27th. W. Hall, A. L. Stewardson ; Sept. 30th. R. A. Meek, R. A. Nicholas, J. Pamplin, C. H. Smith, A. Thurwood, G. K. Wood, D. Smith ; Oct. 1st. W. V. Jackson, A. L. Price, W. H. Tresham, H. M. White ; Oct. 2nd. G. P. Maffey, W. G. Anderson, W. H. Miller, G. C. Jenkins, W. H. Morrow, R. Darby, M. J. Clark, H. A. Gill, J. O'Rourke, J. M. F. McDonald, W. J. Mabb,

C. McIver-Campbell; Oct. 3rd. L. G. Brown; Oct. 5th. E. W. King, E. G. D. Carteret, E. C. Farmer, L. R. Robins, T. Aldred, G. A. Livett; Oct. 7th.

The surname of C. H. Thomas is as now described, and not "Thomson," as in *Gazette* Sept. 17th.

The Christian names of John William Brown are as now described, and not "William John," as in *Gazette* Sept. 27th.

Capt. R. A. Walmisley relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt.; Oct. 12th.

Capt. B. S. Lyons-Williams (3rd Bn., Wilts R., S.R.) relinquishes his commn. on account of ill-health contracted on active service; Oct. 12th.

Capt. E. J. McOustra resigns his commn. to resume his medical studies, and is granted the hon. rank of Capt.; Oct. 12th.

Lieut. (Temp. Capt.) D. H. Chamberlain relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt.; Oct. 12th.

Lieut. S. G. Robinson relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lieut.; Oct. 12th.

Lieut. W. E. Dexter (British Columbia R.) relinquishes his commn. on account of ill-health caused by wounds; Oct. 12th.

Lieut. T. F. D. R. Aikman relinquishes his commn. on account of ill-health caused by wounds, and is granted hon. rank of Lieut.; Oct. 12th.

Lieut. J. E. Cross (Manch. R., S.R.) relinquishes his commn. on account of ill-health caused by wounds; Oct. 12th.

Lieut. P. B. Holgate relinquishes his commn. on account of ill-health, and is granted hon. rank of Lieut.; Oct. 12th.

Lieut. C. E. Rushworth relinquishes his commn. on account of ill-health, and is granted hon. rank of Lieut.; Oct. 12th.

Lieut. P. W. J. Harris relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Observer; Oct. 12th.

The following Sec. Lieuts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers:—

S. A. Hinde, W. J. Jowett, H. C. Hayes, R. J. L. Spinks; Oct. 12th.

Lieut. R. D. Leigh-Pemberton, M.C. (Lieut., Gren. Gds.), relinquishes his commission on ceasing to be employed; July 8th.

Lieut. V. C. Kirtle resigns his commn.; Oct. 12th.

Administrative Branch.

To be Temp. Majs. while employed as Majs.:—Lieut. (Temp. Capt.) W. H. Osman; Sept. 4th. Lieut. (Temp. Capt.) H. Waddington; Sept. 24th. Capt. F. E. Hellyer, from (S.O.); Oct. 12th.

Capt. T. C. Macaulay, M.C., to be Capt. from (S.O.); Aug. 31st.

Lieuts. to be Temp. Capts. while employed as Capts.:—A. H. Tarper; Aug. 1st. Hon. H. C. Smith, from (A.); Aug. 4th. A. D. Collins; Sept. 9th. C. T. Wilson from T.; Sept. 16th. R. A. Denne, (Hon. Capt.) F. C. Smith, R. H. Grey; Oct. 1st.

Lieut. (Temp. Capt.) W. F. Merritt to retain his temp. rank while employed as Capt., from (T.); May 7th.

Lieuts. to be Lieuts.:—C. B. D. Campbell, from (A.); Aug. 24th. G. O. Pocock, from O.; Aug. 26th. D. H. Houston, from (A.); Sept. 1st. S. Orchard, from (K.B.); W. L. S. Keith-Jopp, from (A.), R. St. J. Hartley, from (A.); Sept. 30th. F. W. Avison, from (K.B.); Oct. 1st. (Hon. Capt.) F. C. Townshend, from (A.); Oct. 10th. Sec. Lieut. S. B. Browning to be Temp. Lieut. whilst employed as Lieut.; Sept. 3rd.

To be Sec. Lieuts., and to be Temp. Lieuts. whilst employed as Lieuts.:—C. Guthrie, from (T.), (Hon. Lieut.) D. A. Childs, from (T.), G. Feeny, from (T.); June 30th.

L. J. Torrie (Capt., Ind. Army) is granted a temp. commn. as Capt.; Aug. 11th.

C. W. Soden (Temp. Maj. Manch. R.) is granted a temp. commn. as Lieut. and to be Hon. Maj.; Aug. 27th.

The following are granted temp. commns. as Lieuts.:—R. H. Grey (Temp. Lieut., R. Fus.); Sept. 27th. A. W. S. Wagner (Hon. Lieut., ret.); Oct. 7th C. E. Crabbe, M.C. (late Capt., E. Ont. R., C.E.F.), and to be Temp. Capt. whilst specially employed; Oct. 10th.

The following are granted temp. commns. as Lieuts.:—G. K. D. Simmons (Lieut., E. Kent R., T.F.); Sept. 6th. Sir W. A. Ripley, Bt. (late Res. of Officers); Sept. 21st. R. Marfarlane (Temp. Lieut., R. War. R.); Sept. 30th.

H. A. Plater is granted a temp. commn. as Sec. Lieut., and to be Temp. Lieut. whilst specially employed; Oct. 10th.

The following are granted temp. commns. as Sec. Lieuts., and to be Hon. Lieuts.:—L. W. Park (Hon. Lieut., ret.), A. D. E. Rippon (Hon. Lieut., ret.); Oct. 10th.

The following are granted temp. commns. as Sec. Lieuts.:—W. E. Back, D. Craig, F. A. Owgan, W. A. Scott, E. W. Shaw, H. C. Wilkin; Oct. 7th. A. S. G. Baker, L. Collins, W. N. Crimp (prob. Flt. Off., late R.N.A.S.), P. F. Garnett, N. F. S. Hecht, L. J. Timms; Oct. 10th.

M. Worms is granted a temp. commn. as Sec. Lieut.; Oct. 7th (substituted for notification in *Gazette* Sept. 24th.

The Christian names of Ernest Edgar Blake are as now described, and not as in *Gazette* Oct. 1st.

The initials of Sec. Lieut. (Temp. Lieut.) F. W. Poat are as now described, and not as in *Gazette* July 5th.

Capt. W. A. Knox (Capt., C.F.A., C.E.F.) relinquishes his commn. on ceasing to be employed; Oct. 1st.

Lieut. (Temp. Capt.) F. R. Dixon relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt.; Oct. 12th.

Lieut. F. L. Bradshaw (actg. Paymr., R.N.R.) relinquishes his commn. on ceasing to be employed; Sept. 4th.

Lieut. E. W. Berry relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lieut.; Oct. 12th.

Sec. Lieut. A. L. Hudson relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Oct. 12th.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lieut.:—G. T. Rodda, W. R. Nichols; Oct. 12th.

The following Sec. Lieuts. resign their commns., having been found permanently unfit for further instruction as Pilot or Observer:—P. J. C. Johnson, T. C. Coulson; Oct. 12th.

Sec. Lieut. W. E. Middleton relinquishes his commn. on account of ill-health; Oct. 12th.

Sec. Lieut. R. J. Gilbert is removed from the service for absence without leave; July 14th.

Sec. Lieut. E. G. Stephens (Warrant Victualling Offr., R.N.) relinquishes his commn. on ceasing to be employed; Aug. 17th.

Sec. Lieut. (Hon. Lieut.) E. G. T. Lowe (Lieut., Som. L.I.) relinquishes his commn. on ceasing to be employed; Sept. 30th.

The notification in *Gazette* Sept. 10th concerning Sec. Lieut. T. Bathurst, is cancelled.

Technical Branch.

Maj. (Temp. Lieut.-Col.) R. Holloway, M.B.E., to retain the temp. rank of Lieut.-Col. while employed as Lieut.-Col., from (S.O.); Sept. 28th.

Capts. to be Temp. Majs. while employed as Majs.:—H. C. Mills; Aug. 28th. J. H. Banks; Sept. 19th. T. Martin; Sept. 20th. W. Millett; Sept. 30th.

Lieuts. to be Temp. Capts. whilst employed as Capts.:—W. A. Hancock; April 13th. J. G. Connell, from (S.O.); Sept. 25th. A. R. Jones; Oct. 3rd. Sec. Lieut. C. E. Amoore to be Temp. Capt. whilst employed as Capt.; Aug. 22nd. Capt. W. Brass is reclassified as Lieut. whilst employed as Lieut., from (K.B.); Sept. 30th. Sec. Lieut. F. Woombell to be Lieut. whilst employed as Lieut.; Sept. 25th.

Sec. Lieuts. (Temp. Lieuts.) (Ad.) to be Sec. Lieuts. (Temp. Lieuts.):—A. H. Dawson, T. Honnor; Aug. 16th.

Sec. Lieut. (Hon. Lieut.) P. H. West to be Sec. Lieut., and to be Hon. Lieut., from Observer Officer; July 27th (substituted for notification in *Gazette* Aug. 30th concerning Lieut. P. H. West (E. Surr. R., T.F.)).

The initials of R. G. L. Simpson are as now described and not as in *Gazette* Sept. 27th.

The initials of St. J. G. S. Clerke are as now described, and not as in *Gazette* Sept. 27th.

The following are granted temp. commns. as Sec. Lieuts.:—W. G. Browne, S. E. Castle, G. T. Laverty, J. Tunnadine; Oct. 10th.

Capt. T. A. Cotton relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt.; Oct. 12th.

Capt. A. M. Hughes relinquishes his commn. on account of ill-health caused by wounds and is granted the hon. rank of Capt.; Oct. 12th.

Sec. Lieut. J. H. Turner relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Oct. 12th.

Sec. Lieut. E. C. Stanners relinquishes his commn. on ceasing to be employed; Oct. 2nd.

Medical Branch.

The following are granted temp. commns. as Capts.:—H. McW. Daniel, M. Murphy, W. Lessey (late Capt., R.A.M.C.); Oct. 10th.

The following are granted temp. commns. as Lieuts.:—T. Acton; Oct. 3rd. O. Hilton; Oct. 10th.

Dental Branch.

The following are granted temp. commns. as Lieuts.:—R. C. T. Evetts; Oct. 7th. N. A. Goudge; Oct. 8th.

Memoranda.

Lieut.-Col. (Temp. Col.) R. S. Roy, C.M.G. (Comdr., R.N.) relinquishes his commn. on ceasing to be employed; Oct. 1st.

Lieut.-Col. H. T. A. Bosanquet (Act. Comdr., R.N.) relinquishes his appointment and commission on ceasing to be employed; Oct. 7th.

Capt. (Temp. Maj.) W. B. Adams relinquishes his appointment and temp. rank; Sept. 30th.

Sec. Lieut. (Hon. Lieut.) S. R. Proctor to be Temp. Capt. while holding a special appointment at the Ministry of Munitions; Aug. 17th.

Lieut. C. A. H. Aspinall to take rank and prec. as if his appointment as Lieut. bore date Aug. 10th.

The following are granted temp. hon. commns. as Lieuts. while employed as Asst. Inspectors, A.I.D.:—A. V. Houghton, W. Sutton; Oct. 12th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, October 7th.

Flying Officers (Observers).—Temp. Lieut. H. S. Gros, Manc. R., and to be transfd. to R.F.C. Gen. List; Jan. 31st, seniority Oct. 11th, 1917.

London Gazette Supplement, October 8th.

Flying Officer.—The appointment of Temp. Sec. Lieut. A. O. B. Turner, Gen. List, is antedated to Feb. 9th.

The following appointment is made:—

Equipment Officer, 2nd Class.—Lieut. J. P. D. Maclagan, R. Scots. (T.F.), from a Flying Officer; March 13th.

London Gazette Supplement, October 12th.

Equipment Officer, 3rd Class.—Lieut. H. M. Woodhouse, Yeo. (T.F.); Jan. 17th

A New German Incendiary Bomb.

FROM Paris comes a story that German aeroplanes have recently been dropping incendiary bombs of a new model, called "election bombs." These bombs are said to be very light and at the same time very effective; each aeroplane can carry nearly 200. The only means of checking the spread of fires caused by them is to isolate the locality where the chemical substances drop, the nature of which is known. Doubtless means will be found shortly for neutralising their effect.

Substitute for Goggle Glass.

A MESSAGE from Washington, U.S.A., states that the Medical Research Board of the Division of Military Aeronautics has found a substitute for glass for aviators' goggles. It is stated that although the substance, which is not glass, has been on the market for some time, it has not hitherto been possible to cast it in the right strength and thickness for goggles. The substance is described as hard and non-inflammable, and is said to ensure practically a non-shattering lens.

Lieut. Fonck's Score Reaches 70.

ON the day that Lieut. Garros was reported missing, Lieut. Fonck succeeded in raising his score of enemy machines destroyed to seventy. In the course of a solo patrol he sent down two single-seaters, and followed it up by destroying a couple of two-seaters.

Good American A.A. Work.

THE anti-aircraft gunners with the American Army on the Meuse have been making good practice. They recently shot down 32 enemy aeroplanes, and two motor batteries brought down four inside four minutes over Montfaucon.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

General Headquarters, October 5th.

"On October 4th our squadrons vigorously continued their operations. Many targets were reported to our artillery, and much valuable reconnaissance and photographic work was accomplished. Our bombing machines were again active, 21 tons of bombs being dropped by day and 25 tons by night. The railway junctions in rear of the enemy's battle front were attacked by night. Damage to the permanent way and rolling stock resulted. In air fighting 14 hostile machines were destroyed and six driven down out of control. Eight of our machines are missing."

War Office, October 5th.

"*Balkans.*—The enemy started a retirement in the Vardar Valley on the night of September 21st. The British and Greeks were in pursuit before daylight on the 22nd. The pursuit was principally taken up by the Derbyshire Yeomanry, the 26th Division, and the 14th Greek Division, through very hilly country, and to some extent was delayed by strong rearguard actions. Aeroplanes here did great service by bombing selected points on the lines of retreat, and great quantities of equipment were everywhere abandoned."

General Headquarters, October 6th.

"On October 5th our squadrons continued their work in cloudy and unsettled weather. Artillery observation, reconnaissance, and photographic work were accomplished. Contact was kept with our advancing infantry, and the positions of our troops and the movements of the enemy rapidly reported to the various headquarters. Twenty-two and a-half tons of bombs were dropped by us on suitable targets behind the enemy's lines. German fighting machines showed some activity in the morning, when several combats took place. As the result of these encounters eight hostile machines were shot down and three driven down out of control. Four German balloons were also destroyed. In addition, one enemy machine was shot down by our anti-aircraft guns. Nine of our aeroplanes are missing. A strong wind and low clouds greatly restricted our operations at night, but one of our squadrons succeeded in dropping over a ton of bombs on railway junctions in rear of the enemy's positions. One of these machines has not yet been located."

General Headquarters, October 7th.

"On October 6th bad weather restricted flying operations, but useful reconnaissance and artillery observation work was completed. The positions of our infantry on the battle fronts were reported, and over 7 tons of bombs were dropped on suitable targets in rear of the enemy's lines. German aircraft showed very little activity. One enemy balloon was destroyed. Five of our machines are missing. Our night-bombing squadrons took advantage of a slight improvement in the weather, and attacked important railway junctions on the enemy's communications. Sixteen and a-half tons of bombs were dropped, and many direct hits obtained on the railways."

General Headquarters, October 8th.

"On October 7th bad weather again restricted flying operations, but some reconnaissance, photographic, and artillery observation work was successfully accomplished. Nearly 13 tons of bombs were dropped by us on different targets. A German aerodrome and the railway near Lille were attacked from a very low altitude, our pilots supplementing their bombing attacks with vigorous machine-gun fire. Hostile aircraft were active on the northern sector of the front, but showed little activity elsewhere. In air fighting nine German machines were destroyed, and one other was driven down out of control. One enemy balloon was shot down in flames. Four of our machines are missing. Two of the machines reported yesterday as missing on the 6th inst. have now been located. No bombing operations could be carried out at night on account of weather conditions."

Headquarters R.A.F., Independent Force, October 9th.

"On the morning of the 9th inst. our squadrons heavily bombed the railways at Metz-Sablon. One direct hit was obtained on two trains and 19 others on workshops, sidings and railway lines. All our machnes returned."

General Headquarters, October 9th.

"On October 8th our squadrons actively continued their operations on the whole front. Close touch was kept with our advancing troops. Smoke curtains dropped around enemy strong points proved of great value. Many targets were reported to our artillery, and photographic and reconnaissance flights were carried out. Parties of the enemy's infantry and transport were scattered by machine-gun fire, and bombs directed upon them from low altitudes. Twenty-one tons of bombs were dropped by our airmen. In air fighting, 10 German machines were destroyed and two driven down out of control. Two of the enemy's balloons were shot down in flames. Seven of our machines are missing. At night over 23½ tons of bombs were dropped by us on railways in the enemy's communications. Two trains were hit and derailed, and several large fires started in railway sidings. All our night-flying machines have returned."

Headquarters R.A.F., Independent Force, October 10th.

"On the night of October 9th-10th our machines heavily attacked the railways at Mézières, Metz-Sablon, and Thionville, and Frescaty and Morhange aerodromes. Good results were observed at Mézières. Five direct hits were obtained on the railway at Metz-Sablon and a fire was caused. At Thionville two direct hits were obtained on the railway and four on the Karlshutte works. Twelve and a-half tons of bombs were dropped. All our machines returned. To-day, Metz-Sablon was again heavily attacked. Five direct hits were obtained on the railway triangle and one on the bridge over the railway. No machines are missing."

General Headquarters, October 10th.

"All branches of flying operations were energetically continued on October 9th. Numerous targets were reported to our artillery. Observation of the resultant fire showed that much damage was caused and many fires and explosions started in enemy battery positions. Useful information was obtained, and a large number of photographs were brought in by our reconnaissance photographic machines. Close co-operation was kept with our advancing troops, and their movements reported to the headquarters concerned Squadrons of aircraft flew low over the retreating enemy, causing destruction and confusion in their columns by bombs and machine-gun fire. Railway junctions at Mons Valenciennes, and Lille were attacked with bombs, and direct hits were observed on the permanent way. In all ovef 33 tons of bombs were dropped by us. German aeroplanes showed activity, and considerable fighting in the air resulted. Twenty-one enemy machines were shot down and nine were driven down out of control. Nine of our mahicnes are missing. The weather conditions at night prevented our night-bombing machines from carrying out their work."

War Office, October 11th.

"*Italian Front.*—During the past week the hostile aerodromes at Campoformido and Egna have been attacked with bombs and machine-guns from the air. Several hangars, as well as aeroplanes on the ground, were destroyed. On each occasion hits were obtained on a train and the occupants escaping from these trains machine-gunned from the air. In air fighting six enemy machines have been destroyed. Four of our machines are missing."

General Headquarters, October 11th.

"Bad weather restricted flying operations on October 10th, but our low flying machines actively continued to harass the retreating enemy with bombs and machine-gun fire. Over 12 tons of bombs were dropped by us. Some successful reconnaissance and artillery observation work was accomplished, and several hundred photographs were taken. German airrcaft showed very little activity throughout the day. In air fighting two enemy machines were destroyed. One of our machines failed to return. On account of weather conditions, no night-bombing took place."

Headquarters R.A.F., Independent Force, October 11th.

"On the night of the 10th-11th inst., our machines, in spite of thick mists, attacked the railways at Thionville, Metz-Sablon, and Mézières, the blast furnaces at Rombach, and the hostile aerodrome at Frescaty. All our machines returned."

General Headquarters, October 12th.

"On October 11th flying operations were again greatly restricted on account of weather conditions. Some reconnaissance work was successfully carried out, and our aeroplanes continued to keep close contact with our infantry. Our low-flying machines again inflicted casualties on parties of German infantry and columns of transport with bombs and machine-gun fire, dropping in all over 9 tons of bombs. There was very little activity on the part of the enemy's aeroplanes. One hostile machine was destroyed. One of our machines is missing. Low clouds and rain prevented flying at night."

General Headquarters, October 13th.

"On October 12th a thick mist and rain made flying operations extremely difficult. Two and three-quarter tons of bombs were dropped by our low-flying machines. There was no decisive fighting in the air. None of our machines are missing. Weather conditions prevented night operations."

General Headquarters, October 14th.

"British, Belgian, and French airmen played a great part in the battle (in the coastal area) bombing enemy concentrations and trains on the move, and also machine-gunning enemy infantry.

"On October 13th, in spite of mist and rain, valuable reconnaissances were successfully carried out by our contact machines at a very low height, and the enemy was continually harassed by bombs and machine-gun fire. There was no air-fighting, but one enemy machine was shot down in our lines by machine-gun fire from the ground. One of our machines is missing. At night the weather improved, and 12 tons of bombs were dropped by us on important railway communications. One of our night-bombing machines failed to return."

French.

Paris, October 5th.

"In spite of low clouds and mist numerous reconnaissances have enabled us closely to watch the movements of the enemy. Four German machines were brought down and a captive balloon set on fire in the course of the day. Flying at a very low altitude, our bombers attacked with bombs and machine-gun fire enemy troops and convoys in the battle zone, and thus used 20 tons of projectiles. During the night over 13 tons of bombs were dropped on the railway stations of Laon, Mont Cornet, Maison Bleue, Le Chatelet, Mt. St. Rémy, and Juniville, where large fires broke out. On September 26th Lieut. Daladier brought down an enemy machine and set fire to a captive balloon, the 10th and 11th successes respectively of this pilot."

Paris, October 6th.

"On October 4th, although the atmospheric conditions were again very unfavourable, our bombers dropped 13½ tons of projectiles on enemy concentrations of troops, convoys, and batteries, the last of which were obliged to cease fire. During the night only a few aeroplanes were able to carry on operations, on account of the bad visiblity. Eighteen tons of projectiles were dropped on the stations of Le Chatelet-sur-Retourne and Neuflize, and conflagrations caused. During the daytime on the 4th, 21 enemy aeroplanes were felled or driven down out of control."

Paris, October 7th.

"On October 6th the bad weather considerably hindered our aerial operations, and prevented our bombers carrying out any work. Nine enemy aeroplanes were nevertheless shot down or driven down out of control."

"The activity of the various French naval air groups was very intense during the month of August. Aeroplanes and seaplanes flew a distance of 495,000 nautical miles, carrying out 4,288 patrols of a total duration of 8,595 hours. Naval airships made 286 flights, spending 1,924 hours in the air and covering 77,020 nautical miles. Altogether during the month of August 572,720 miles were covered in 4,574 patrols, as against 485,330 miles covered in 4,194 patrols in July. Captive balloons carried out 185 flights of a total duration of 3,346 hours. A captive balloon remained for 25 consecutive days, without being deflated in tow of its trawler."

Paris, October 11th.

"During the day on October 10th our bombing aviators working in conjunction with advanced elements of ourinfantry, carried out important operations, dropping over 35,000 kilogrammes of projectiles on concentrations of troops and convoys in the region of Vouziers and on a munitions depôt, which exploded. Numerous fights in the air took place, in the course of which 17 enemy aeroplanes were brought down or fell disabled. Eight balloons were set on fire. Our observing machines incessantly flew over the rear of the enemy front, reporting particularly numerous fires which the enemy is kindling during his retreat. During the night our bombing squadrons continued their activity of the daytime, dropping 24,000 kilogrammes (24 tons) of explosives on bivouacs in the region of Laon, the stations of Longuyon, Hirson, Attigny, Pauvres, Mont Cornet, and on the convoys and trains in the Mont Cornet-Rethel region. Numerous hits were observed, and fires and explosions were caused, especially in the stations of Hirson and Attigny. During the month of September our airmen have felled or brought down out of control 211 enemy machines, of which only eight fell in our lines, most of the fights having taken place within the enemy lines. Sixty-two enemy balloons were set on fire. Our bombing squadrons in the same period dropped 369,000 kilogrammes of projectiles, or 156,200 kilogrammes in the daytime and 213,000 during the night."

Belgian.

Havre, October 5th.

"Our airmen, as well as British squadrons, were active. Over 10 tons of bombs were dropped on enemy railway stations, organisations, and aerodromes, especially at Ardoye, Deynze, Melle St. Denis Westrem, Thourout, Lichtervelde, and Zeebrugge. Ten enemy machines have been brought down. Lieut. Coppens achieved his 34th and 35th victories in bringing down two captive balloons, and Sub-Lieut. Meulemeester his 11th success in the destruction of another enemy balloon."

Havre, October 7th.

"Our aeroplanes bombarded enemy cantonments at Westende and Middelkerke. Two enemy aeroplanes were brought down between Dixmude and Houthulst—one by our motor-guns and the other by our airmen."

Havre, October 8th.

"German aeroplanes were very active, and machine-gunned our first lines and our roads towards Moorslede and Passchendaele. An enemy detachment attempted in vain to approach our positions near Amersveld."

Havre, October 14th.

"Belgian and Allied airmen gave the most useful collaboration (in the battle in the coast region) helping our infantry and our artillery by bombarding and

machine-gunning the retreating enemy convoys and columns. Two balloons and five enemy aeroplanes were brought down. Lieut. Coppers achieved his 36th victory."

Italian. *Rome, October 5th.*

"Aerial activity was intense during the last 24 hours. Aeroplanes and airships effectively bombarded vital centres of the enemy and one of his aviation camps. During numerous air combats four hostile planes were brougpt down."

Rome, October 6th.

"Our own and Allied airmen were very active. Hostile flights were faced and driven back in combats over Val Lagarina and Susegana. An enemy plane was seen falling out of control. The aviation camp at Egna (Upper Adige) was bombarded with incendiary bombs. The destruction of huts, hangars, and three machines was ascertained. Effective bombing of the enemy's lines of communication was carried out on the Asiago Plateau."

Rome, October 7th.

"Last night our airships bombed with very effective results the aviation camps in the Venetian Plain and military objectives at Primolano (Sugana Valley) and at Fucine (Sole Valley). Two hostile planes were brought down in air fighting."

Rome, October 8th.

"Last night our airships, though hindered by strong winds, effectively bombarded aviation camps and vital enemy centres in the Trentino and Venetian Plain."

Rome, October 9th.

"Our own and Allied aerial activity was very intense. Our chasers attacked a hostile patrol, bringing down one machine. Trenches, hutments, railway establishments, and columns in movement were bombed and attacked with machine-gun fire at a low altitude."

"*Albania.*—Our own and British airmen effectively bombarded and attacked with machine-gun fire troops and transport on the march along the Rogojina-Durazzo road."

Rome, October 10th.

"*Albania*—Aeroplane flights effectively bombarded a large encampment to the east of Durazzo."

Rome, October 13th.

"Yesterday afternoon our air squadrons effectively bombarded the works of Muggia (Gulf of Trieste). Some enemy machines who tried to drive us off were promptly repulsed."

"*Albania.*—On 10th and 11th Italian naval and British airmen successfully bombarded the bay and the neighbourhood of Durazzo.

German. *Berlin, October 5th.*

"During the last two days we shot down 65 enemy aeroplanes. Lieut. Baumer won his 40th and 41st aerial victories."

Berlin, October 6th.

"Yesterday we shot down 37 enemy aeroplanes and two captive balloons."

Berlin, October 11th.

"During the month of September, 773 enemy aeroplanes (124 by anti-aircraft guns) and 96 balloons were destroyed on the Western front. Four hundred and fifty of these aeroplanes are in our possession. The rest were seen to fall within the enemy's lines.

"In spite of the frequently great superiority in numbers of the enemy, we only lost 107 aeroplanes in battle. This successful fighting in the air created the basis for the energetic participation of our airmen in the battle on the ground by reconnoitring by day and night. By bombing raids on objectives of military importance in the enemy's hinterland and by attacks on the battlefield with machine-guns and drop-mines (*Wurfminen*) they effectively supported everywhere the infantry and artillery.

"In spite of the enemy's obstinate attacks on our captive balloons, during which we lost 103, he was unable to hinder the activity of our observers, who went up regardless of danger."

Austrian. *Vienna, October 6th.*

"Near Neumarkt, in the Southern Tirol, as the result of an Italian aerial attack on a war prisoners' camp, numerous Italian war prisoners were killed and wounded."

WORK OF THE R.A.F.

THE R.A.F. Independent Force has once again broken all its own records by dropping over 178 tons of bombs on military objectives in Germany during the month of September. The rapidly growing severity of these raids is strikingly indicated by the following figures showing the total weight of bombs dropped over Germany during the last four months :—

June, 1918	66 tons.
July, 1918	81 tons.
August, 1918	100 tons.
September, 1918	178¾ tons.

A large number of the September raids were carried out in conjunction with the brilliantly successful Franco-American attack upon the St. Mihiel salient, when for three days and nights a practically continuous assault from the air was made upon the railway junction and triangle at Metz-Sablon and other German centres vital to the supply of this part of the Western Front.

The following is a list of the more important places in Germany attacked (exclusive of aerodromes, &c.), showing the precise military objectives upon which the bombs were discharged and the number of times each place has been raided :—

Towns—Objectives.	Times raided.
Metz-Sablon, railway junction and triangle ..	24.
Mannheim, chemical factories	Six.
Karlsruhe, factories, docks and station ..	Four.
Ehrange, railways	Four.
Kaiserslautern, factories	Three.
Saarbrucken, railways	Twice.
Thionville, railways	Twice.
Frankfurt, factories and railway	Twice.
Burbach, blast furnaces	Twice.
Hagondange, blast furnaces	Once.
Mainz, railway junctions	Once.
Rombach, blast furnaces	Once.
Stuttgart, factories	Once.
Treves, station	Once.

In addition, a large number of very effective raids have been made during September upon the German aerodromes at Buhl, Boulay, Frescaty, Morhange, &c.

SIDE-WINDS.

JUST at present when ordinary stock lists are so quickly out of date it is often difficult or even impossible to ascertain exactly where many fitments are obtainable at short notice. To meet this difficulty Messrs. Brown Brothers are now issuing twice each week a list of fittings actually in stock at the time of posting. Of lines appearing in these lists immediate deliveries may be had, a point of particular importance in view of present conditions. *Bona fide* buyers of aircraft fittings should therefore write to 22-34, Great Eastern Street, London, E.C. 2, immediately for their names to be included as regular recipients of these lists.

THOSE who are in the market for non-ferrous fittings, such as taps, cocks, nuts, joints, bushes, relief valves, unions, lubricators, filler caps, and seatings, &c., for aircraft will find the new list issued by Messrs. Best and Lloyd, Handsworth, Birmingham, very useful indeed. They will be pleased to send a copy to anyone on receipt of trade card.

FULL of useful information on the subject of industrial varnishes, japans, enamels, &c., is a little book which is to hand from Messrs. Jenson and Nicholson, Ltd., Stratford, London, E. 15. Each of the products of the firm is given a special note showing how it can be used, what it is useful for and what it will stand. It is, therefore, easy to select the right medium for any particular job of work on hand.

FOLLOWING their recent stock-taking, Messrs. Aircraft Supplies are now ready to quote ex-stock for nearly every item usually listed in "Aircraft Supplies" in response to enquiries by telephone, telegraph and verbal enquiries.

LEISURE HOURS.

THE fame of the Gordon Watney Dramatic Company is spreading, and remembering their excellent rendering of "Sweet Lavender" recently in the Works Canteen Theatre, it is not surprising to hear that they have been invited to give it under more advantageous conditions at one of the leading London theatres shortly. As soon as the details are arranged we shall announce them, and it is hoped that all who can will support it, for, apart altogether from the fact that all those present will have an afternoon's enjoyment, they will be helping on the R.A.F. Hospitals' Fund—a worthy cause indeed.

THE boxing section of the Grahame-White Recreation Association held another of their popular tournaments on Wednesday evening, October 9th, an audience numbering about 800 assembling in the large hall attached to the works. During the evening Joe Conn, who had very kindly promised to give an exhibition, was introduced, but owing to the imminence of his championship contest with Tanzy Lee, this exhibition had to be postponed to another occasion. In the ten-rounds contests, Alf Green (Finsbury) beat Wally Trainer (Hoxton) and A. J. Milner (A.S.C.) beat Sergt. Jarvis (A.S.C.) ; while in the six-rounds contests G. Hutton (Grahame-White) beat Fred Watson (Clerkenwell) ; G. Burrows (Grahame-White) beat A. Thick (Grahame-White) ; and A. Allen (Grahame-White) beat E. Burns (Grahame-White). In a 9-stone competition C. Oakes beat W. G. Hull.

A CHEQUE for two thousand francs has been sent to the Hertford British Hospital, Levallois, as a result of the sports meeting organised by the R.A.F. at the Racing Club in Paris recently.

COMPANY MATTERS.

NEW ISSUE.

THE AIRCRAFT MANUFACTURING CO., LTD.—The British, Foreign and Colonial Corporation, Ltd., 57, Bishopsgate, London, E.C. 2, are receiving through their bankers, the London Joint City and Midland Bank and Lloyds Bank, applications for the purchase of £250,000 seven per cent. short term notes of £50 each at par. Interest paid twice yearly, namely April 1st and October 1st. The notes will be redeemed at £57 10s. per note by five equal annual drawings of 1,000 notes each, over a period of five years commencing October 1st, 1921, or earlier, at the company's option, but at the same premium of 15 per cent. The capital expenditure on land, buildings, plant and machinery for the purpose of extensions since the outbreak of war to March 31st, 1918, amounted to £386,664. Upon the basis of the profits for the year ending March 31st, 1918, the fixed interest on the notes is covered more than ten times, and, including the proceeds of the present issue, these notes will be covered by assets to the extent of more than £175 for each £50 subscribed. Allowing for the profit on redemption the average yield of the notes is 10 per cent. The company is engaged in the manufacture of aeroplanes, motors and parts of every description, its business is of a most varied nature and does not depend on the manufacture of any special type of aeroplane or engine. Contracts in hand to-day are in excess of any previous records, and it is to cope with this large volume of business that the new capital is required. The investment is an attractive one, and the subscription list closes on or before Monday next, October 21st.

Particulars set out in the prospectus give hard facts, which, but for their authenticity over the signatures of Mr. G. Holt Thomas and the chartered accountants Messrs, Lescher Stephens and Co., might well be romance of the very wildest Jules Verne invention. But they *are* facts *in figures* which carry with them further conviction from the stupendous actualities day by day taking place in connection with the military and naval operations of our forces. These figures show that for nine months' working the sales have grown from £67,000 odd in 1913 to 4¾ millions sterling for nine months in 1918, the in-between years from 1914 showing £198,746, £292,557, £689,326, and £2,608,018 respectively. Resulting from these sales the nett profits for nine months in each year, after allowing for all charges, including excess profits liability, have progressed from £9,762 in 1913 to £663,353 in 1918. The surplus in assets over liabilities shows an equally progressive increase from £14,000 odd to £663,353.

The Sunbeam Motor Car Co., Ltd.

IN our issue of October 10th we published the directors' report for the year to August 31st, 1916. The report for the year to August, 1917, is now to hand, and this shows that the profit for the year, after paying all expenses of management and allowing for depreciation and income tax and after making provision for the estimated amount payable for excess profits duty and munitions levy for the year (but before providing for directors' remuneration), amounts to £115,110 0s. 9d. After adding £37,392 17s. 6d., the balance from last year, and deducting £900, the half-yearly dividend on the preference shares, and £12,000, the interim dividend at 5 per cent. (free of tax), on the ordinary shares paid in April, there is a balance of £139,602 18s. 3d., out of which the following appropriations have been made in accordance with the resolution passed at the meeting held on November 27th, 1917: Balance of dividend on the preference shares, £900; final dividend of 10 per cent. (free of income tax) on the ordinary shares, £24,000; bonus of 1s. per share (free of income tax) on the ordinary shares, £12,000; directors' remuneration (free of income tax), £5,000; balance carried forward £97,702 18s. 3d.

Vickers, Ltd,

AT the adjourned annual meeting on October 8th, Mr. Douglas Vickers, who presided, paid a tribute to Mr. Albert Vickers, the late Chairman, who he said had passed a long life of 64 years with the company,

In moving the adoption of the annual report and balance-sheet, the Chairman said in 1915 they had inaugurated a policy, since adopted by the Ministry of Munitions, of mobilising not only their own resources, but those of every outside engineering firm that they could bring together. They got together everything that could increase their output. The result, which was not shown in the balance-sheet, was an enormous output. It ran into figures of 25½ millions if they reckoned the output of the company alone, without taking into account the inter-works, or something over 29 millions if all were reckoned.

With regard to their peace proposals he did not propose to go fully into them—it would take too long. His references at the last meeting had been widely circulated, and they had actually received a suggestion as to the best way to develop their peace resources. The company expected to get a very largely increased output of ships, railway materials, motor-cars, turbines, electrical materials, gas engines, wood products, sewing machines and electrical work generally.

It seemed to him that however the world might be constituted after the war we should still be making armaments to some extent. Reconstruction after the war would keep our engineering firms busy for some time to come. There would also be a very large field for spreading British trade abroad, for after all we had learned a good many things in this war. We had learned how to get work done on repetition lines in this country to an extent never before attempted by us, and he thought everything promised well for the future, provided only that our relations with labour were good. As to labour, he took a very promising view of the future.

Sir Trevor Dawson seconded, and the resolution was carried.

At an extra-ordinary meeting which followed resolutions were passed authorising the increase of the capital of the company to £13,500,000 by the creation of £6,450,000 new ordinary shares of £1 each, ranking in all respects *pari passu* with the existing ordinary shares.

NEW COMPANIES REGISTERED.

ANGLO-AMERICAN AERIAL SERVICES, LTD., 29A, Charing Cross Road, W.C.—Capital £100, in £1 shares. Objects, to establish, maintain and work lines of aerial conveyances between the United Kingdom and the U.S.A., Canada and Central and South America, and between the continents of North and South America and the various States and provinces thereof and other places, &c. Permanent directors: Lionel Phillips, W. H. Lewis and Lieut. A. M. Willmott, A.S.C.

FIRST BRITISH AND INTERNATIONAL AERIAL NAVIGATION CO., LTD., 12-14, Harrington Road, South Kensington, S.W.7.—Capital £50,000, in 45,000 ordinary shares of £1 each and 100,000 deferred ordinary shares of 1s. each. Objects, to carry on the business of carriers of passengers, goods, mails, &c., by aerial navigation or otherwise, &c.

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IMPORTS AND EXPORTS, 1917–1918.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25th, 1912; for 1912 and 1913, see "FLIGHT" for January 17th, 1914; for 1914, see "FLIGHT" for January 15th, 1915; for 1915, see "FLIGHT" for January 13th, 1916; for 1916, see "FLIGHT" for January 11th, 1917; and for 1917, see "FLIGHT" for January 24th, 1918.

	Imports.		Exports.		Re-Exportation.	
	1917.	1918.	1917.	1918.	1917.	1918.
	£	£	£	£	£	£
January ...	10,842	49,402	67,033	24,765	—	—
February	9,479	51,941	26,512	13,545	6	—
March ...	11,158	47,930	58,517	11,451	—	1,000
April ...	21,141	33,342	21,151	10,815	—	—
May ...	6,877	942,866	59,713	67,224	—	—
June ...	2,670	864,296	14,647	35,658	—	—
July ...	9,104	1,834,293	106,250	10,800	—	—
August ...	18,680	566,137	68,315	71,503	258	—
September	9,047	505,160	56,491	8,033	30	100
	98,998	4,895,367	478,629	253,794	294	1,100

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FLIGHT

and The Aircraft Engineer,

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Telephone: Gerrard 1828.

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12 ,, ,, ..	28	2	12 ,, ,, ..	33	0

These rates are subject to any alteration found necessary under war conditions.

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